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# Pilot Test of the Knowledge Worker System (KWS) at Fort Eustis, VA

by
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Many Army personnel can be classified as knowledge workers—people who produce not tangible products, but some form of processed or enhanced information. Ongoing research at the U.S. Army Construction Engineering Research Laboratories (USACERL) is resolving problems of information access and management for knowledge workers, with the goal of developing a comprehensive performance support environment for this group.

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# Foreword

This study was conducted for Defense Logistics Agency under Military Interdepartmental Purchase Request (MIPR) No. DLAH-92-ZRM-206. The technical monitors were Harriet Riofrio, DLA-ZI and Richard Reynal, ATZF-EHP

The work was performed by the Business Processes Division (PL-B) of the Planning and Management Laboratory (PL), U.S. Army Construction Engineering Research Laboratories (USACERL). Moonja P. Kim is Acting Chief, CECER-PL-B, L. Michael Golish is Acting Operations Chief, and David M. Joncich is Acting Chief, CECER-PL. The USACERL technical editor was William J. Wolfe, Technical Resources.

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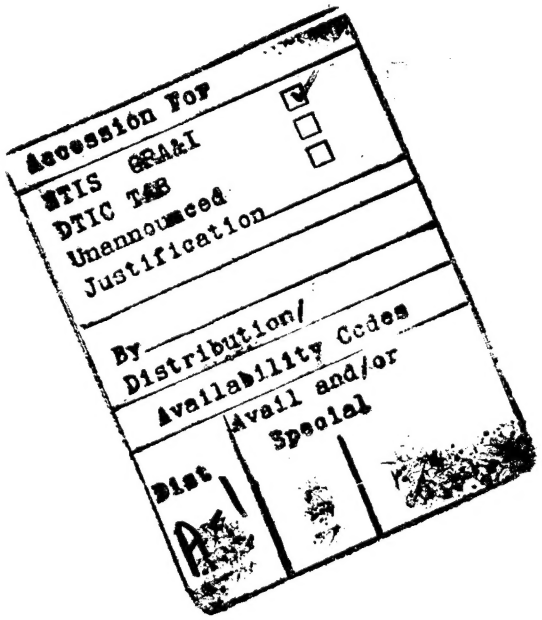

# Contents

# 1 Introduction

## Background

Many Army personnel can be classified as knowledge workers—people who produce not tangible products, but some form of processed or enhanced information. Army knowledge workers perform tasks that are driven by Department of Defense (DOD) deadlines, workgroup coordination, and *ad hoc* events. These knowledge workers make decisions that significantly impact organizational resources and are themselves a significant and costly resource.

The Corporate Information Management (CIM) initiative, undertaken by the Director of Defense Information (DDI) in the Office of the Assistant Secretary of Defense for Command, Control, Communications and Intelligence, seeks a major re-engineering and restructuring of DOD business methods and processes (DOD Directive 8020-1). Two measures inaugurated by DDI to assure CIM program objectives involve reducing costs of information technology implementation through standards and expediting CIM programs by providing evolutionary organizational training methods. Business can be re-engineered by using an Integrated Computer-Aided Manufacturing Definition (IDEF) to model business processes and highlight areas where improvements will have the highest pay-off. However, new information technology alone is only part of business re-engineering. Information technology must also be closely tied to the process improvements, information flows, and decision processes.

Ongoing research at the U.S. Army Construction Engineering Research Laboratories (USACERL) is resolving problems of information access and management for knowledge workers, with the ultimate goal of developing a comprehensive performance support environment for this group. The Knowledge Worker System (KWS) is a performance support environment designed to help government knowledge workers organize and coordinate their work by storing task scheduling information in a centralized data base. KWS tracks scheduled events, lists completed events, and outlines the steps necessary to complete forthcoming tasks.

KWS functions as an automated performance support environment (PSE), comprised of an integrated set of automation systems, that guides Army action officers through the course of their daily tasks by helping them organize, prioritize, and execute their

work efficiently and effectively. KWS enhances productivity and reduces stress in an event-driven, high-demand environment by:

- dynamically scheduling organizational activities
- helping to distribute work fairly
- supporting supervisory management reporting
- automatically executing repetitive tasks
- capturing institutional knowledge to give users predecessors' expertise
- providing a user-friendly training tool to reduce the learning curve
- facilitating the exchange of information throughout the organization, from worker to worker, program to program, and system to system.

The Knowledge Worker System can provide the needed link between the disparate parts of information technology. KWS can play an integral part of the CIM business re-engineering process; as part of the CIM program, it can help meet the need for a wide range of functional process improvements and training requirements by providing institutional knowledge on an as-needed, individualized basis. KWS Version 1.6 is currently in the pilot phase of development. A final version is planned for release in fiscal year 1996 (FY96).

## Objective

The goal of this project is to demonstrate the ability of KWS to implement opportunities for process improvement through pilot tests of the system. These pilots serve as a basis for developing a model for application of KWS to other areas, defining the relationships between Business Process Improvement and KWS, and creating a strategic plan for broader implementation.

## Approach

A pilot site was selected according to established criteria. With the selection of a pilot site and the specific offices at that site to implement, interviews were done to gather information about the processes performed at those particular offices. The information gathered from the interviews were input into the Knowledge Worker System data base for use by the knowledge workers at the pilot site. KWS was installed at the pilot site, training was conducted, and support visits were made. After the program was put into use, an evaluation of the system was done and recommendations were made regarding the continued development of KWS and its use at Fort Eustis.

## Scope

KWS uses institutional knowledge capture for Business Process Improvement. When a process is changed, it is captured in KWS for future use. As such, KWS continues the decomposition of processes done in IDEF. IDEF decomposes at a high level; KWS decomposes at a lower level. The combination of these two covers all processes at all levels.

# 2 Site Selection

## Overview

Several agencies, both governmental and nongovernmental, were involved in executing this project. To coordinate activities between them, a Concept of Operations was created, including: Participants and Roles, Tasks and Task Schedule, and Specific Responsibilities. Figure 1 shows the Task Schedule used. The three steps to selecting the site(s) were:

1. Develop a Work Plan
2. Determine Performance Metrics
3. Determine the Pilot Site(s).

## Develop Work Plan

A work plan was developed with the constraint that the project had to be complete by 1 June 1993. From the outset, it was recognized that this time frame did not allow for a thorough evaluation of the results. Therefore, this stage of research uses estimates of the impact. Concurrently, with the development of a work plan, the KWS demonstration program and executive overview program were revised to better brief future KWS participants.

## Determine Performance Metrics

On completion of the project work plan, the next task was to determine the performance metrics—how success would be measured. USACERL has an ongoing, multi-year KWS research project on how to measure productivity and productivity increases among knowledge workers. One method being investigated is the use of Work Profile Analysis developed by Dr. Peter G. Sassone of Georgia Tech.* In this method, the knowledge worker's activities are broken into work categories. The worker then keeps

* Peter G. Sassone, "Cost Benefit Methodology for Office Systems," *ACM Transactions on Office Information Systems*, vol 5, No. 3 (July 1987).

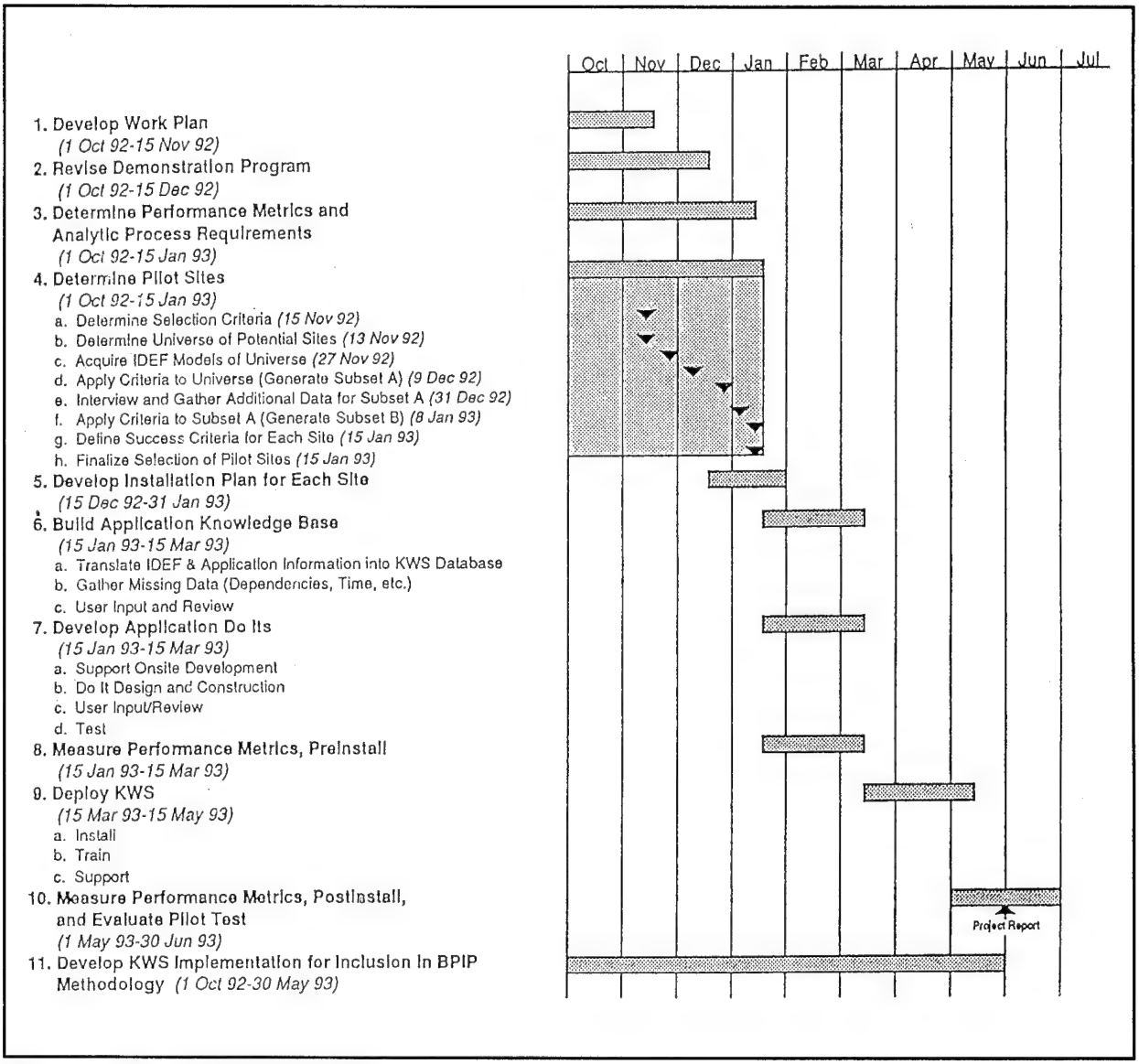


**Figure 1. Task 1 (prototype) schedule.**

a daily time log of his/her activities. A tally of the logs ultimately reveals how much time knowledge workers spend, on average, performing each work category. An analysis is then made to see if knowledge workers are spending a majority of their time performing the tasks for which they were hired. For example, such an analysis might be used to determine if a manager is spending more time supervising and decisionmaking, or doing clerical duties. The Work Profile Analysis requires significant time to determine the work categories, to build the time logs, and then to analyze the results. This project's relatively short time line did not allow it to be used.

Another method of determining performance metrics is to measure the differences in time it takes to accomplish a task.* After determining the events, tasks, or steps that a knowledge worker performs (part of building the knowledge base), the knowledge worker relates how long it takes to accomplish a task or step before KWS is installed. A distinction is made between waiting time (the time waiting for someone else to perform their task) and the time the knowledge worker spends performing an activity. After the installation of KWS, the knowledge workers are surveyed for the time to perform a task. The change in time is then multiplied by the knowledge worker's wage rate and by the number of occurrences of the task per year, resulting in an annual productivity increase figure. This method was selected for this project. (There is potential for more in depth study in this area, particularly in measuring the benefit of KWS to a new knowledge worker's learning curve.)

## Determine Pilot Site(s)

A set of selection criteria was written to aid in finding the best pilot site (Appendix A) and the criteria were weighted by level of importance (critical, important, or nice to have). The criteria included physical (hardware/software, location), political (enthusiasm, top management support), and resource characteristics (completeness of IDEF models, automated data processing [ADP] support, etc.). The methodology for selecting a site was to:

1. Determine selection criteria (Appendix A)
2. Apply the criteria to the pool of potential sites
3. Select a pilot site
4. Determine the functional area to implement.

The initial pool of sites consisted of those sites conducting the Functional Process Improvement Plan (FPIP) through the office of the Director of Defense Information (DDI). The site's IDEF and Activity Based Costing models were reviewed to select a subset of sites with the best IDEF model factors for implementing KWS. Additional information was gathered about the site to better judge the Site Related Factors.

A 2-day review was conducted by representatives from Defense Logistics Agency (DLA), Dynamic Research Corporation (DRC), Alexandria, VA, and USACERL of over 30 IDEF model reports covering over 15 potential sites. DIS and OASD Ambulatory

* B.E. Thomas, J.P. Baron, and W.J. Schmidt, *Evaluating A Performance Support Environment for Knowledge Workers*, Technical Report 95/32 (U.S. Army Construction Engineering Research Laboratories [USACERL], September 1995).

Health Care scored the highest in the review. The detailed results of this review are in Appendix B.

After this review, another possibility arose. The U.S. Army Corps of Engineers Engineering and Housing Support Center (EHSC)* had performed a detailed IDEF and Activity Based Costing (ABC) analysis of the Directorate of Engineering and Housing (DEH) at Fort Sill. In addition, earlier IDEF modeling had been performed as part of the development of the Integrated Facilities System–Mini/Micro (IFS-M). There are 119 DEHs worldwide that all perform the same functions. This potentially large audience would allow for tremendous savings in acquiring process information.

Two potential DEH sites were then considered, Fort Sill and Fort Eustis. While Fort Sill had just recently performed detailed IDEF and ABC models and Fort Eustis had not, it was decided that the functions performed by both were similar enough that a majority of the Fort Sill study was applicable to Fort Eustis. Given this assumption, the IDEF model factors were judged to be equal. Fort Eustis was selected over Fort Sill because of its top management support (EHSC, TRADOC, and the DEH), because the user hardware was partially present, and because a computer network already existed.

Having determined the site, it was then necessary to identify potential KWS implementation opportunities in the DEH/DPW environment. To do this, the Fort Sill Activity Based Costing Project Report, dated May 1992, was used as a theoretical model of the DEH business. The first step was to evaluate the identified improvement opportunities (IOs) (Appendix C). One hundred twenty-three IOs were eliminated as outside the scope of KWS because the IO recommended changes in physical environment, regulation, policy, personnel, and/or ADP systems unrelated to KWS.

The remaining IOs were then grouped by subject area to determine the subject areas with the most potential for improvement (Appendix D). Those subject areas with the most IOs and/or greatest potential dollar savings were then considered: *Provide Administrative Support*, *Train Personnel*, and *Process In-House Work Order*. The two subject areas with the greatest identified potential dollar savings were *Process In-House Work Order* and *Process Service Order*.

The first subject area considered was *Process In-House Work Order*. This area had the most IOs and the biggest identified potential dollar savings. However, there is a risk of duplication of effort in this subject area because of the extensive automation help already provided to the work reception office and shops through IFS-M. More

* Now the U.S. Army Center for Public Works (USACPW), 7701 Telegraph Road, Alexandria, VA 22312-3862.

importantly, KWS currently emphasizes cyclical, complex tasks rather than highly structured tasks that occur multiple times a day, such as work order reception. These tasks are more suited to conventional automation.

On briefing the KWS concept to EHSC, TRADOC, and Fort Eustis DEH representatives, the area of work orders was again mentioned. The Production Control Shop is an area within the Fort Eustis DEH that deals with work orders and customer service and is the most important area within the DEH environment. A more detailed look at this area identified several tasks that would benefit from KWS implementation. Four people within the Production Control Office were selected: the Chief Estimator, a Work Control Technician, a Scheduler, and an Estimator.

The area of Real Property and Space Utilization was also recommended because it is an area gaining in significance due to BRAC. As the Army is reduced in size and reorganized, this area is becoming more burdened with work, but has been provided with little automation help . Three people within the Real Property/Space Utilization were selected: the Real Property Officer and two Real Property Clerks.

Both of these areas involve the general work areas of *Provide Administrative Support*, *Oversee Performance of Activities*, and *Train Personnel*. Future areas of opportunity within the DEH would be to select the DEH office, the Engineering Resource Management Division (ERMD), and Engineering Plans & Services (EP&S). Implementing KWS in these offices would provide process improvement in the areas of *Provide Administrative Support*, *Budget/Account for Operations*, *Oversee Performance of Activities*, *Process Construction Work Order*, and *Train Personnel*. These offices contain a large percentage of knowledge workers in the DEH/DPW organization. Their tasks are often complex and cyclical in nature, involve coordinating work among many individuals, are generic across DEH/DPWs, and frequently access many diverse data bases.

# 3 Proposed/Pilot-Tested KWS Implementation Methodology

## Kickoff Meeting

With the selection of a pilot site and the specific offices in which to implement the system, an initial briefing should be conducted at the site with the implementation coordinator, the participant's supervisors, and the participants. This meeting will demonstrate KWS and review the installation plan. The installation plan is a schedule of the interviews, installation, training, and support visit(s).

At Fort Eustis, the initial briefing was conducted at the site with Michael Mitrione from DRC; Kevin Stewart and Linda McCarthy from USACERL; the implementation coordinator, Michael West; the participant's supervisors, Edward Edwards and Rufus Byrd; and the participants, Carolyn Prokup, Kathy Mueller, James Brown, Marge Zolinski, and Angelyn Risher from Fort Eustis. At this meeting, KWS was demonstrated and the schedule of activities was reviewed.

## Build Knowledge Base

The IDEF models will be used during the interviews as a starting point for the interviews and to help the interviewees see where they belong in the business process of the installation. Three interviews are planned using two interviewers. (At Fort Eustis, two interviews were done using two interviewers.) The interviewers must have an understanding of both the information required by KWS and the capabilities of Do Its.

The goal of the initial interview is to give interviewees an opportunity to freely talk about their jobs. This allows the participants to lay a foundation for understanding the general activities performed by the knowledge worker, to offer suggestions on improvement opportunities, and to give interviewees a feeling of ownership in the KWS process. Another goal of this interview is to identify the opportunities for Do Its.

The interviewers should then take the information gathered and fit it into the IDEF model. Typically, the IDEF model's detail extends only to the Task level and does not

extend to Steps. In preparing for the second interview, the interviewer tries to add detail to the IDEF model and to organize the information gathered in the first interview into the IDEF model. The interviewer also identifies potential Do Its and the unknown ADP information needed to create the Do It.

The second interview should be more structured; it involves presenting the information gathered during the first interview with the goal of correcting errors and adding depth to the information. This can be done by updating the IDEF models. The interviewers at this time should also collect information necessary to construct the Do Its (for example, to identify the fields from IFS-M that would appear in specific reports, review copies of reports and forms, and locate files).

Due to the shortness of the overall schedule at Fort Eustis, only 1 week lapsed between the first and second interviews. More time would have allowed a better opportunity to prepare for the second interview so that consequently, needed ADP information for the construction of the Do Its had to be gathered through telephone calls, faxes, and another site visit.

Following this interview, the builders of the knowledge base put the information into the Event/Task/Child Task/Step structure of KWS using the forms contained in Appendix E, "Building the KWS Data Base." By this time, all information for the Do Its and Attachments should be gathered and the final interview should be conducted. This step may be done through telephone calls and faxes. The goals of this interview are to confirm the Event/Task/Step accuracy, gather the remaining KWS data requirements (i.e., assignments, dependencies, priorities, frequencies, etc.), and gather the before-performance metrics information on the Tasks/Steps (Appendix H).

By this time, all data, forms, and files will have been collected. The Do Its are constructed using the selected tool set (i.e., batch files, macros, programs, etc.). The Do Its are tested externally to KWS, and are then tested within KWS. Any Do Its created for another installation that are applicable to the current site should be used.

At Fort Eustis, the Do Its were constructed using the toolset of VistaCom scripts, WordPerfect macros, 1-2-3 macros, batch files, Clipper programs, and dBase data files. The Do Its were tested externally to KWS, then within KWS. No Do Its created for other installations were applicable to this site (Appendix I).

The knowledge base can now be built, and should be completely entered into the data base (with appropriate due dates, frequency of occurrence, durations, etc.) and assigned to the appropriate people for accomplishment. The Do Its and Attachments are attached to the proper Task or Step.

## Installation

At this point, the installation of KWS at the pilot site is ready for completion. The knowledge base has been input into the KWS Task Data Base and backed up. The server is now ready to be shipped to the site. Two people proficient in Oracle and computer hardware/software should then visit the site to install the server and the KWS software on the participants' machines. They will then test the system to make sure everything is running as it should.

Because Fort Eustis did not already have user workstations, the installation occurred in two phases. First, the user workstations were purchased, configured, and installed for the users before the commercial Windows training. Appendix J lists the equipment purchased. Part of the installation included providing a means for the users to continue "business as usual" (i.e., executing old DOS applications from within Windows).

Then the knowledge base was input into the Oracle server and backed up, and the server was shipped to Fort Eustis. Two people proficient in Oracle and computer hardware/software then went to the site and installed the server and the KWS software on the participants' machines.

## Training

The participants are trained in two phases. Phase one provides commercial training in the use of Microsoft Windows if the staff are not already familiar with Windows. Appendix F includes a course outline. On completion of this training, the KWS users are allowed several weeks to get comfortable with the Windows environment.

After the users are comfortable with the Windows environment, 2 days of KWS training is conducted using the current data base for "hands on" training. Appendix G contains a course outline. The training emphasizes the need to customize the KWS knowledge base—to add depth and extend the knowledge base as it is used. As procedures or information flows change, this needs to be reflected in the knowledge base, thus dynamically instantiating organizational and/or procedural changes into the system. It is crucial that the KWS users understand that this KWS knowledge extension is central to process improvement.

## Support Visits

When training is complete, an immediate support visit is necessary to resolve any problems participants have using KWS, and to fix Do Its. The visit should occur within 2 weeks after the training. Another support visit may occur in another month or so depending on the problems that occur. At Fort Eustis, the follow-up support visit occurred at the same time as the evaluation visit because of the relatively short time frame of the project.

## Evaluation

After the knowledge workers have had at least a month to use the system, it is appropriate to begin doing an evaluation. (At Fort Eustis, the evaluation process was begun after 2 weeks.) Measurements will be taken on how long it now takes to perform tasks and users will also be asked whether they sense that their work has become more efficient using KWS. The users will also be asked to suggest changes or enhancements to the system. A complete evaluation of the pilot study at Fort Eustis has not been completed; however, for four of the Do Its for three people, there is a projected annual savings of about $25,000 (Figure 2).

KWS PRODUCTIVITY IMPROVEMENT*

Army Installation Level -- Four Examples -- Detailed Report

| | HOURS | PAY RATE INCL OH | COST/ REPORT | ANNUAL COSTS | ANNUAL COST AVOIDED | WEEKLY HOURS SAVED | PERCENT OF THE OFFICE'S TIME USED | PERCENT OF THE OFFICE'S TIME SAVED | PERCENT OF INDIVIDUAL'S TIME USED | PERCENT OF INDIVIDUAL'S TIME SAVED |
|---|---|---|---|---|---|---|---|---|---|---|
| PRODUCTION SHOP REPORT [WEEKLY]** | | | | | | | | | | |
| PRE-KWS | 16.00 | 14.40 | 230.40 | 11,981 | | | 10.00% | | 40.00% | |
| POST-KWS | 2.00 | 14.40 | 28.80 | 1,498 | | | 1.30% | | 5.00% | |
| | | | | | 10,483 | 14.00 | | 8.80% | | 35.00% |
| PROJECT STATUS REPORT [WEEKLY] | | | | | | | | | | |
| PRE-KWS | 3.00 | 20.50 | 61.50 | 3,198 | | | 1.90% | | 7.50% | |
| POST-KWS | 0.50 | 20.50 | 10.30 | 533 | | | 0.30% | | 1.30% | |
| | | | | | 2,665 | 2.50 | | 1.60% | | 6.30% |
| SCHEDULER'S REPORT [WEEKLY] | | | | | | | | | | |
| PRE-KWS | 16.00 | 14.40 | 230.40 | 11,981 | | | 10.00% | | 40.00% | |
| POST-KWS | 4.00 | 14.40 | 57.60 | 2,995 | | | 2.50% | | 10.00% | |
| | | | | | 8,986 | 12.00 | | 7.50% | | 30.00% |
| PROJECT LIST REPORT [MONTHLY] | | | | | | | | | | |
| PRE-KWS | 16.00 | 14.40 | 230.40 | 2,765 | | | 2.30% | | 9.20% | |
| POST-KWS | 1.00 | 14.40 | 14.40 | 173 | | | 0.10% | | 0.60% | |
| | | | | | 2,592 | 3.50 | | 2.20% | | 8.70% |
| ANNUAL SAVINGS | | | | | 24,726 | ***32.00 | | 20.00% | | 79.90% |

* PROJECTIONS BASED ON THE KWS INSTALLATION OF 5 PEOPLE IN THE PRODUCTION CONTROL OFFICE AT FT EUSTIS.

** ANNUAL FIGURES FOR WEEKLY WORK IS BASED ON 52 WEEKS OF PERFORMANCE. THIS ASSUMES THAT VACATIONS DO NOT ELIMINATE THE NEED FOR THE WORK.

*** THE WEEKLY HOURS SAVED COLUMN REPRESENTS HOURS SAVED BY EACH EXAMPLE. THE TOTAL SAVINGS OF HOURS IS CALCULATED ON AN OFFICE-WIDE BASIS.

**Figure 2. Projected KWS productivity improvement at Fort Eustis.**

# 4 Recommended KWS Site Installation Methodology

## Lessons Learned

The experience gained during the pilot study done at Fort Eustis was used to modify the proposed KWS installation methodology for use at other installations. The recommended methodology includes the following changes:

1. An Installation Coordinator should be designated to facilitate coordination between the implementation team and the knowledge workers. This person would be responsible for providing local resources to the implementation team, including, but not limited to: conference room reservations, A/V equipment, training facilities, workspace for the team, and coordinating TDY visits.

2. The implementation team requires a dedicated KWS workstation configured identically to that of the future Knowledge Workers, and with the same external connectivity (i.e., IFS-M connection). This workstation should also be set up to allow remote access by the implementation team. This would minimally require: (a) Norton *PC Anywhere*, (b) a 9600 Baud Modem, and (c) a dedicated phone line for the modem.

3. The implementation process requires a dedicated, direct network-to-network mail connection between the implementation team's home and the installation. This would facilitate building the knowledge base (by allowing e-mail to be used to clarify data), would ease program installation (by allowing e-mail of changes in executable program code), and would help coordinate activities between the implementation team and the knowledge workers.

4. Beyond the criteria listed in Appendix A, the site's network and workstation hardware/software must support shared resources (i.e., laser printer and file service), network mail, and Windows versions of any user software. If any required hardware and software must be purchased, enough time must be allowed for delivery, installation, and training.

5. The installation and the implementation team must specify an implementation agreement outlining the responsibilities of each party and a simple mechanism for changing the agreement.

## Site Selection

A candidate site for KWS implementation should do an IDEF analysis as part of the Functional Process Improvement Plan (FPIP) or apply the IDEF model of a similar organization. For example, the Fort Eustis DPW could use the Fort Sill DPW IDEF model. Also, the IDEF "As Is" model should be evaluated for potential improvement opportunities that can be addressed by KWS.

These improvement opportunities should be analyzed to select specific offices that would benefit most from KWS installation. When evaluating improvement opportunities, the following factors should be considered:

1. Whether the areas/processes would offer immediate savings
2. Whether the activities are non-site specific
3. Whether the activities access multiple sources of data
4. Whether the improvements are measurable
5. Whether the tasks are programmable
6. Whether the tasks are complex
7. Whether the tasks are cyclic
8. Whether there is high turnover in the job(s) targeted for analysis
9. Whether there is data exchange between KWS processes.

When identifying potential site locations to which an existing IDEF model can be applied, the criteria should include:

1. Political support (enthusiasm, top management support)
2. Physical configuration (hardware and software)
3. Resources (ADP support).

## Coordination Meeting

A coordination meeting should be conducted with organizational hierarchies to develop the installation plan. The plan should minimally:

1. Schedule activities
2. Identify the Installation Coordinator and designate responsibilities
3. Identify the Implementation Team Coordinator and designate responsibilities
4. Identify hardware/software to be purchased
5. Identify resource requirements
6. Provide a mechanism for changing the schedule
7. Specify a mechanism for determining who will pay for unexpected requirements
8. Designate responsibilities for support after the installation.

## Kickoff Meeting

With the selection of a pilot site and the specific offices in which to implement KWS, a kickoff meeting should be conducted at the site with (minimally): the implementation coordinator, the participants' supervisors, and the participants themselves. The meeting should include:

1. Introductions
2. A KWS demonstration
3. A review of the site installation plan, modified as needed.

## Determine Performance Metrics

The method(s) for measuring success for the implementation of KWS need to be determined. The metrics selected should be as quantifiable as possible even though some areas will be subjective (e.g., quality). Other metrics to be considered include:

1. Time to perform tasks
2. Quantity of work produced
3. Resources required to complete individual tasks
4. Time spent waiting for someone else to finish related tasks
5. Quality of work produced
6. Learning time for new employee and/or new tasks
7. Skill requirements to accomplish tasks.

The metrics must be determined before the interviews so that the interviewers can gather the information needed for the "before picture." (After the installation, participants often forget what things were like before KWS.)

## Build Application Knowledge Base

To build the knowledge base for KWS, the implementation team must define the Event/Task/Child Task/Step hierarchy, identify attachments, and develop Do Its. The task hierarchy needs the following data that are not provided by the IDEF models:

1. Schedule information (cycles, durations, date due, frequency, etc.)
2. Priority
3. Who tasks are assigned to and performed by.

While building the knowledge base, the processes, tasks, and steps must continuously be analyzed for more efficient, cost effective ways to perform the process, task, or step. Improvements could result from:

1. Rearranging the sequence of steps taken to complete the task
2. Eliminating non-value-added steps
3. Taking advantage of technological advances in hardware/software
4. Eliminating "bottlenecks."

The KWS implementation process requires an interview location that offers privacy and isolation, but that is also close enough to individual work stations to allow easy demonstration of new processes in the target work environment. If possible, a direct e-mail connection should be in place to allow easy dialogue between the participants and the implementation team. Again, the implementation team will need a dedicated workstation at the installation to give the interviewers a place to record the collected data and a workstation to test and demonstrate without displacing participants.

The implementation team must be prepared to conduct an iterative set of structured interviews to obtain an in-depth understanding of tasks to be performed. Three interview sessions are recommended to compile the required information. The interviewer(s) need to have an understanding not only of the information required by KWS, but also of the capabilities of Do Its and how to construct them. Important factors to consider during an interview are:

1. Giving interviewees an opportunity to freely talk about their jobs
2. Taping the interview session (if there are no objections)
3. Scheduling interviews to fit interviewees' schedules
4. Making sure questions are clearly understood
5. Paraphrasing long answers with short restatements of facts
6. Using open-ended questions to discover attitudes and opinions
7. Using closed ended questions to identify or clarify specific facts

8. Obtaining specific examples where appropriate
9. Documenting the results of all interviews.

The IDEF models should be used as a starting point for the interviews, and to help the interviewees see where they belong in the business process of the installation. The models should be studied beforehand to develop a "straw man" of the task hierarchy. Interview questions should be structured to focus on identifying all tasks and performance metrics associated with a given process.

If the selected site is similar to a previously installed version of KWS, then the previous knowledge base should be used as a basis to build on. The events and the first levels of the task structure should be the same. What *will* change will be step level information, work flow assignments, and the Do Its.

During the initial interview, the goal is to give interviewees an opportunity to freely talk about their jobs. This allows the interviewer(s) and interviewee(s) to lay a foundation for understanding the general activities performed by the knowledge worker, to offer suggestions on improvement opportunities, and to give interviewees a feeling of ownership in the KWS process. Another goal of this interview is to identify the opportunities for Do Its.

The interviewer(s) should then take the information gathered and fit it into the IDEF model. Typically, the IDEF model's detail extends only to the Task level and does not extend to Steps. In preparing for the second interview, the interviewer(s) tries to add detail to the IDEF model by putting into a simple flowchart, and to organize the information gathered in the first interview into the IDEF model. The interviewer also identifies potential Do Its and the unknown ADP information needed to create them.

The second interview should be more structured and should involve presenting the information gathered during the first interview with the goal of correcting errors and adding depth to the information. This can be done by updating the flowcharts previously done from the IDEF data. The interviewer(s) at this time should also collect information necessary to construct the Do Its (for example, by identifying the fields from IFS-M that might appear in specific reports, reviewing copies of reports and forms, and locating files).

Following this interview, the builders of the knowledge base put the information into the Event/Task/Child Task/Step structure of KWS using the forms contained in Appendix E, "Building the KWS Data Base." By this time, all information for the Do Its and Attachments should be gathered.

The final interview should then be conducted. This step can be performed through telephone calls, faxes, and/or e-mail. The goals of this interview are to confirm the Event/Task/Step accuracy, gather the remaining KWS data requirements (i.e., assignments, dependencies, priorities, frequencies, etc.), and gather the before-performance metrics information on the Tasks/Steps.

Where domain-specific Do Its exist in reuse libraries, it is important to determine if any are applicable to the KWS tasks being developed at the current site. At this point, all data, forms, and files should have been collected. Any new Do Its will be constructed using the selected tool set (i.e., batch files, macros, programs, COTS, etc.). The Do Its should be tested external to KWS, and then tested within KWS.

When these steps are complete, the Knowledge Base can be built. The knowledge base should be completely entered into the data base (with appropriate due dates, frequency of occurrence, and durations), and assigned to the appropriate people for accomplishment. The Do Its and attachments should be associated with the proper Task or Step.

## Installation

If the site needs to acquire user hardware and/or software for the KWS implementation, the installation of that equipment should occur at the earliest opportunity. The user should be given as much time as possible to become familiar with the Windows environment and applications. Part of the installation of the Windows environment should be to provide the users with a means to do business as usual and to move to the new environment as they feel comfortable. It is important to recognize that users still need to perform their old jobs until the new KWS environment is installed.

The installation of KWS at the pilot site should be completed prior to KWS training. The knowledge base should have been input into the KWS Task Data Base and backed up, and then the server should be shipped to the site. Two people proficient in Oracle and computer hardware/software should then visit the site and install the server and the KWS software on the participants' machines. They will then test the system and all Do Its to make sure everything is running properly.

## Training

Participants should be trained in two phases. Phase one will include commercial training in the use of Microsoft Windows and any new Windows applications, if users are not already familiar with Windows and/or the new application(s). On completing

this training, the KWS users should be given several weeks to get comfortable with the new environment.

Once users are comfortable with the Windows environment, 2 days of KWS training is conducted using the current data base for "hands on" training. The training should emphasize the need to customize the KWS knowledge base—to add depth and extend the knowledge base as it is used. As procedures or information flows change, these changes need to be reflected in the knowledge base, thus dynamically instantiating organizational and/or procedural changes into the knowledge base. It is crucial that the KWS users understand that KWS knowledge extension is central to process improvement.

## Maintenance Support

When training is complete, an immediate support visit is necessary to help resolve any problems participants may have using KWS and the Do Its. This visit should occur within 2 weeks after the training; subsequent monthly visits may occur until the system stabilizes. Early support should be provided by the implementation team.

A long-term plan for maintenance support should be formulated either through onsite or contract personnel. The support should minimally provide:

1. Server/workstation hardware/software support and updates
2. KWS program updates
3. New user training
4. Do It maintenance and creation
5. Expansion of KWS applications.

## Evaluation

Based on the performance metrics selected, each Event/Task should be evaluated. After the knowledge workers have had at least a month to use the system, it is appropriate to begin an evaluation. Depending on the type of metrics selected before installation, the appropriate measurements are taken. At a minimum, measurements should be taken on how long it now takes to perform tasks. Users should also be asked to identify any new tasks they now have time to do now that they are using KWS. The users should also be asked to suggest changes or enhancements to the system. The results of the analysis should be documented for later use.

## Update "To Be" Model

The information gathered during the KWS installation should be used to update the "To Be" model. If a "To Be" model has not been developed, the "As Is" model should be modified to reflect the changes.

## Document and Catalog Do Its

It is important to document and catalog the new Do Its into domain-specific reuse libraries, especially if the same KWS functionality is to be installed at multiple locations (e.g., facility management at various DPWs). These libraries support reuse and may also:

1. Provide a baseline from which to analyze site activities
2. Provide a basis for comparative analysis of similar processes
3. Help to evolve "ideal" processes across the DOD
4. Maintain an audit trail of process changes.

## Continuous Process Improvement

Periodic review of other related KWS projects will lead to improvement opportunities within the organization. Technology, directives, and procedures will always change over time. KWS processes, tasks, and steps should be reviewed for potential improvements.

# 5 Conclusions and Recommendations

This study demonstrated the ability of the Knowledge Worker System to implement opportunities for process improvement through a pilot test of KWS at Fort Eustis, VA. This pilot test will serve as a basis for developing a model for application of KWS at other Army installations and to other areas of application.

It is concluded that the Events, Tasks, and Child Tasks developed for Fort Eustis are likely to translate directly to other installations and areas of application. It is also concluded that the extension of the pilot work done in developing the steps and Do Its at Fort Eustis to other DEHs may be indirect; the principles underlying the creation and application of KWS were shown here to be sound and generally applicable, but individual steps and Do Its may be specific to an installation or application area. While all DEHs perform the same processes, they accomplish those processes in different ways using different tools. For example, while Fort Eustis uses *Lotus* 1-2-3 (spreadsheet program) and *WordPerfect* (word-processing software); other organizations might use Microsoft *Excel* and *Word*. Such difference would necessarily impact the Do Its. The other impact would lie in the area of size and diversity of organization. Larger installations might split tasks differently. This kind of impact would require less effort than the changes in Do Its.

In this pilot test, KWS has shown itself to be an extension to the Business Process Improvement Program. By providing a direct means to implement new processes within an organization and to provide process improvement at the execution level, KWS provides a more direct means of change than through the publication of additional regulations and policies. Changes in procedure are reflected in individual To Do lists.

It is recommended that the Knowledge Worker System be further implemented at Fort Eustis. The system was well received by Fort Eustis personnel; both the Commander and Deputy Commander have expressed interest in expanding the scope of KWS implementation to include more offices. Like many Army installations, Fort Eustis is currently undergoing reorganization and reduction in force. It is also recommended that the Installation Methodology outlined in Chapter 4 of this report be taken as a working strategic plan for expanding the use of KWS to other installations. Expanded

use of KWS would not only continue the productivity improvements measured in this study, but would also provide a unique opportunity to:

- measure the impact of KWS on training new personnel
- expand the scope of KWS to include newly created positions
- measure the success of wide-area implementation of KWS
- extend the successful Fort Eustis experience to other DEHs.

# Appendix A: Selection Criteria

## Hardware/Software Requirements for Knowledge Worker System (KWS) Site

1. Oracle Server Requirements
   a) Hardware
      CPU–Any ORACLE-certified multi-processor platform.
      Memory–Minimum of 16 Megabytes of RAM is recommended.
      Disk–200 Megabytes of disk space on Disk 1 (above the operating system) is required. 400 Megabytes is recommended.
      Network–Interface networking hardware supported by LAN.
      Tape Backup Unit.

      Example–One of our current servers has the following:
         CPU: 386/33
         Etherlink: 8 bit (plan to upgrade to 16 bit)
         RAM: 10M (plan to upgrade to 16M)
         HD size: 320M
         Tape: Arc60 (plan to upgrade to Exabyte 2.5)
         Tape Controller: Emulex 1B02B (plan to upgrade to Adaptec 1542B)
         Vaines: 4.11(5)

   b) Software
      LAN Software
      TCP/IP–Ability to use SQL*Net TCP/IP (e.g., for Banyan Vines, the TCP/IP routing option must be purchased from Banyan.)
      Any LAN software required for access to Oracle
      Ability to access InterNet

2. Client Requirements
   a) Hardware
      CPU–386 or higher with 20MHZ CPU to run MS Windows 3.1 in enhanced mode.
      RAM–Minimum of 5 MB is recommended; 10 MB is better.
      HD–Min. of 40 MB recommended (Windows 3.1 and KWS together require 15M. Network client software and memory manager require additional space.)

Mouse–Required.
Monitor–VGA required.

b) Software
MS-DOS 5.0
Microsoft Windows 3.1
Memory manager such as QEMM or 386MAX is recommended to load the network drivers into upper memory to leave the space for SQL*Net driver and MS Windows 3.1.
Drivers to access Oracle server (e.g., Oracle SQL*Net driver for Banyan Vines).
Capability to run TCP/IP version of SQL*NET.\

## Pilot Site Selection Criteria

| Criteria | Necessity * |
|---|---|
| Enthusiasm of site | |
| Top management support | C |
| Users have time to work with developers | C |
| Completeness of IDEF models | C |
| IDEF models in electronic form | N |
| Opportunities for process improvement | |
| Potential for big improvement | C |
| Processes already identified | I |
| Process automation analysis already done | N |
| Can use pre-exiting tools/Do-Its | I |
| Availability of onsite ADP support | I |
| User and server hardware/software | C |
| Location | C |
| * C = Critical, I = Important, N = Nice to Have | |

## High-Level Site Evaluation Criteria

| Factors | Metric |
|---|---|
| 1. Management support | Y N ? |
| 2. User interface with developers | N/A (Site Selection) |
| 3. User/server hardware & software | Y N Partial |
| 4. Available ADP support on-site | N/A (Site Selection) |

| | |
|---|---|
| 5. Location (DC area) | Y N |
| 6. IDEF Model detail (# levels) | 1, 2, 3 ... n |
| 7. Existing "to -be" model | Y N |
| 8. Improvement potential | N/A (Site Selection) |
| 9. Processes for improvement identified | Y N |
| 10. Pre-existing tools or do its | N/A (Site Selection) |
| 11. Automation analysis done | Y N |
| 12. Activity based costing done | Y N |

# Appendix B: Review of Potential Sites

**Table B1. Potential sites.**

| | Site-Related Factors | | | IDEF Model Factors | | | | Other Factors | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Top Management Support | User & Server HW & SW | Location | IDEF Model Completeness | Existing To-Be | IDEF1-X Models Done | Activity-Based Costing Done | Improvements Identified | KWS CIM Possibility | Comments |
| (1) U.S.Army Reserve Command Independent Commission Baseline Workshop Report | Yes | ? | ? | 3 | No/? | No/? | Yes | Yes/? | No | |
| (14) U.S.Army reserve Command ABC Foundation Workshop Report | Yes | ? | ? | 4 High Level | No/? | No/? | Yes | Yes/? | No | Weak in detail & KWS Applicability |
| (13) U.S.Army Reserve Command Model Consolidation Workshop Report | Yes | ? | ? | 3 | No/? | No/? | Yes | Yes/? | No | Not Standalone - Really has to be used with other Army Reserve Models: (ARCOM, CONUSA, MUSARC, or ARPERCEN) |
| (27) U.S.Army Reserve Command Model Workshop II Report | Yes | ? | ? | 0 | No/? | No/? | Yes | Yes/? | No | Not Standalone - Really has to be used with other Army Reserve Models: (ARCOM, CONUSA, MUSARC, or ARPERCEN) |
| (18) OCAR Baseline Workshop Report | Yes/? | ? | Washington, DC | 3 Very High Level | No | No/? High Level ERs | Yes | Yes/? | No | |
| (26) OCAR ABC Foundation Workshop | Yes/? | ? | Washington, DC | 3 Useful | No | No/? | Yes | Yes/? | No | |
| (7&10) ARPERCEN ABC Foundation Workshop Volume I & II | ? | No/? | St. Louis | 3 Good Detail | Yes/? | Yes/? | Yes | Yes | Yes Not Bad | |
| (15) ARPERCEN MIS Workshop Report | ? | No/? | St. Louis | 3 | Yes/? | Yes/? | Yes | Yes | Yes Not Bad | |
| (23) ARPERCEN Baseline Workshop Report | ? | No/? | St. Louis | 3 | Yes/? | Yes/? | Yes | Yes | Yes Not Bad | |
| (9) First U.S.Army (CONUSA) ABC Foundation Workshop Report | Yes | ? | Ft. Meade | 3 Insufficient | No | Yes | Yes | Yes | No | |
| (5) 125th Army Reserve Command Baseline Workshop Report (MUSARC) | Yes/? | Yes/? | Nashville | 3 Useful | No/? | Yes/? Baseline | Yes | Yes/? | Yes Good | |

Table B1. (Cont'd).

| | Site-Related Factors | | | IDEF Model Factors | | | | Other Factors | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Top Management Support | User & Server HW & SW | Location | IDEF Model Completeness | Existing To-Be | IDEF1-X Models Done | Activity-Based Costing Done | Improvements Identified | KWS CIM Possibility | Comments |
| (12) 125th Army Reserve Command ABC Foundation Workshop Report (MUSARC) | Yes/? | Yes/? | Nashville | 4 | No/? | Yes/? | Yes | Yes/? | Yes Good | |
| (4) OASD C31 DDI DoD Adjudication Process Baseline Workshop Report | Yes | ? | Washington, DC | Too High Level | ? | ? | No | ? | No | |
| (6) OASD C31 DDI Personnel Security Requester Process Baseline Workshop Report | Yes | ? | Washington, DC | Inappropriate for KWS | ? | ? | No | ? | No | |
| (2) DIS Baseline Workshop Report | Yes | ? | Washington, DC | 3 Useful | Yes/? | Yes Minimal | Yes | Yes | Yes Very Good | |
| (16) DIS ABC Foundation Report | Yes | ? | Washington, DC | 5 Very Good | Yes/? | Yes Minimal | Yes | Yes | Yes Very Good | |
| (25) DIS FEA Workshop Report | Yes | ? | Washington, DC | 4 | Yes/? | Yes | Yes | Yes | Yes Very Good | |
| (31) DLA ABC Foundation Workshop | Yes | No | Washington, DC | 4 | Yes | Yes | Yes | Yes | Yes OK | |
| (20) DLA IDEF Modeling for Integrated Technical Applications Program (ITAP) Report | Yes | ? | Washington, DC | Insufficient | ? | ? | No | ? | No | |
| (22) DLA Consumable Item Management Initial Report | Yes | ? | Washington, DC | Not evaluated | Being Done | ? | ? | Being Done | Yes Good | Initial Report Only |
| (28) DLA Consumable Item management Final report - AS IS Activity Model | Yes | ? | Washington, DC | 6 Events & Tasks | Being Done | ? | ? | Being Done | Yes Good | Certain sections have very good potential |
| (32) DLA Depot Maintenance | Yes | Yes/? | ? | 4 Incomplete | ? | No | No | No | No | |

Table B1. (Cont'd).

| | Site-Related Factors | | | IDEF Model Factors | | | | Other Factors | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Top Management Support | User & Server HW & SW | Location | IDEF Model Completeness | Existing To-Be | IDEF1-X Models Done | Activity-Based Costing Done | Improvements Identified | KWS CIM Possibility | Comments |
| (29) OASD (HA) Military Health Services System Ambulatory Health Care Delivery | Yes | Yes/? | ?/Washington, DC | 6+ | No | Yes/? | Yes | Yes | Yes Very Good | Could use help from KWS |
| (19) OASD (HA) Ambulatory Health Care Baseline Workshop Report | Yes | Yes/? | ?/Washington, DC | 4 | No | Yes/? | Yes | Yes | Yes Very Good | |
| (21) OASD Production & Logistics Production Base Analysis | Not Evaluated | Not Evaluated | Not Evaluated | Insufficient | Not Evaluated | Not Evaluated | Not Evaluated | Not Evaluated | No | Decision based on Harriet's experience |
| (11) Director Defense Procurement CIM Procurement Process ABC Foundation & FEA Workshop Report | Yes | ? | Washington, DC | 6+ | Yes | Yes | ? | Yes | Yes Good | Good KWS fit |
| (8) U.S. Military Entrance Processing Command (USMEPCOM) Baseline Workshop Report | Yes/? | ? | ? | 3 Event Level | ? | No | Yes | ? | Yes Not Bad | |
| (17) USSPACECOM Baseline Workshop Report | Yes | Yes/? | Colorado Springs | 6+ | Yes | Yes | Yes | Yes (44 Identified) | Yes Good | |
| (3) Intelligence Product Support Group (Varied Sources) Baseline Workshop Report | ? | ? | ? | Insufficient | ? | ? | No | ? | No | Probably not a single site |
| (30) Varied Sources | Not Evaluated | Not Evaluated | Multiple Sites | Not Evaluated | Not Evaluated | Not Evaluated | Not Evaluated | Not Evaluated | No | Definitely not a single site |

# Appendix C: Fort Sill Improvement Opportunities

## Team Interview Comments (Numbered Improvement Opportunities From Fort Sill, 19 March 1992)

| No. | Comment | Subject Code |
|---|---|---|
| 1. | Develop a software package with commonly used standard forms available on disk and ready for use. Use for SF1034. Establish computer templates for the following documents used in the JOC and Inspection branches: DD1155 Contractor payroll (as many as 70 a month), DD1354 Real property, Eng93 Pay application, and SF40 Modification forms. | AD |
| 2. | Encourage the processing of suspenses. Suspenses are not handled in a timely manner or have unrealistic response dates. | AD |
| 3. | Encourage people to answer their electronic mail in a timely fashion. | AD |
| 4. | Establish preventative maintenance measures for computer hardware. | AD |
| 5. | Bill yearly for customers whose bill is $25 or less per month. | AD |
| 6. | Provide more autonomy to the Co-Located DOC. This includes control of various logs and the ability to print all contract documents locally instead of at DOC headquarters. | AD |

Subject Areas:

| | |
|---|---|
| AD | Provide Administrative Support |
| AG | Acquire Supplies & Services |
| BD | Budget/Account For Operations |
| BQ | Provide Bachelor Quarter Occupancy |
| CO | Process Construction Work Order |
| DG | Develop Guidance |
| EN | Protect The Environment |
| FI | Inspect Facilities |
| HO | Provide Family Housing Occupancy |
| IH | Provide Interment Services |
| LB | Report Actual Labor And Expenses |
| MB | Prepare For Mobilizations & Disasters |
| MD | Develop Information Technology |
| MI | Implement Information Technology |
| MN | Perform Minor Maintenance/Housekeeping |
| MO | Operate Information Technology |
| OV | Oversee Performance Of Activities |
| PB | Provide Reusable Items |
| PR | Administer Personnel Programs |
| RC | Receive Guests and Visitors |
| RL | Maintain Customer Relations/Awareness |
| RP | Maintain Real Property Configuration |
| SO | Process Service Order |
| TB | Troubleshoot Problems And Issues |
| TC | Provide Technical Assistance |
| TR | Train personnel |
| WO | Process In-House Work Order |

| No. | Comment | Subject Code |
|---|---|---|
| 7. | Eliminate unnecessary and redundant reports such as the Tech Data Report, Behickle Usage Report, and Copier Usage Report. Also, consider a reduction in the level of detail associated with some reports such as the Deadline Report. Supply has five 4-door cabinets filled with old receipts that need to be microfiched, eliminated or archived on computer tape. Don't file useless data. Eliminate "AUTODIN" print-outs; not used. Eliminate "Depot Status Cards" from DOL. Various Environmental performance measurement reports don't seen to be used; eliminate. | AD |
| 8. | Provide DOC with more space to accommodate the level of paperwork they generate particularly to handle the year-end rush. | AD |
| 9. | Improve work environments. For example, inadequate lighting and inadequate receiving ramp. | AD |
| 10. | Improve information system capabilities and responses to eliminate the existence of various manually maintained logs. | AD |
| 11. | Eliminate unnecessary copying. | AD |
| 12. | Provide more administrative and secretarial support. Some organizations have to share secretaries. Need better definition of requirements and expectations. Other potential related issues are filtering junk mail and distribution of mail. | AD |
| 13. | Update phone system. Include use of 1-800 numbers without the need for access codes. Implement voice mail system to support information distribution. Need autodial capability. Need upgraded telephone system (rotary now) with switchboard to handle volume of calls and to route calls in Family Housing. | AD |
| 14. | Adopt bar code data entry. Locate the appropriate supply clerk between FMS and DOC. | AG |
| 15. | Let a driver pick up locally expedited materials; not the workers. | AG |
| 16. | Use supplies recovered during recycling (rubber bands, paper clips, etc.). | AG |

Subject Areas:

| | |
|---|---|
| AD | Provide Administrative Support |
| AG | Acquire Supplies & Services |
| BD | Budget/Account For Operations |
| BQ | Provide Bachelor Quarter Occupancy |
| CO | Process Construction Work Order |
| DG | Develop Guidance |
| EN | Protect The Environment |
| FI | Inspect Facilities |
| HO | Provide Family Housing Occupancy |
| IH | Provide Internment Services |
| LB | Report Actual Labor And Expenses |
| MB | Prepare For Mobilizations & Disasters |
| MD | Develop Information Technology |
| MI | Implement Information Technology |
| MN | Perform Minor Maintenance/Housekeeping |
| MO | Operate Information Technology |
| OV | Oversee Performance Of Activities |
| PB | Provide Reusable Items |
| PR | Administer Personnel Programs |
| RC | Receive Guests and Visitors |
| RL | Maintain Customer Relations/Awareness |
| RP | Maintain Real Property Configuration |
| SO | Process Service Order |
| TB | Troubleshoot Problems And Issues |
| TC | Provide Technical Assistance |
| TR | Train personnel |
| WO | Process In-House Work Order |

| No. | Comment | Subject Code |
|---|---|---|
| 17. | Establish more aggregate contract. Gas chlorine and liquid alum are examples. | AG |
| 18. | Locate data transcription closer to the warehouse. Too many keying errors. Look at bar-coding and do away with data transcriber function. | AG |
| 19. | Reduce the frequency of preparation of Form 250, Material Inspection and Receiving Report, in departments other than Supply. | AG |
| 20. | Establish simple system for local and self-service purchases. Credit cards, for instance provide self-service for office supply. Allow more people access to self-service store. | AG |
| 21. | Reduce the number of brands of equipment purchased to minimize amount of spare and/or replacement parts required. | AG |
| 22. | Raise authorization for Blanket purchase Agreements from $1,000 to $2,500 as provided by FAR. Provide BPA authority to each shop for their top 2 03 items. | AG |
| 23. | A Rolodex file for often used supplies is an effective way to index items by description rather than by NSN or MCN. Scrub Stock and Fringe Catalogs. | AG |
| 24. | Provide safety shoe allowances or vouchers. Do away with the property book officer processing requisitions for safety shoes when the PBO orders the shoes. | AG |

Subject Areas:

| | |
|---|---|
| AD | Provide Administrative Support |
| AG | Acquire Supplies & Services |
| BD | Budget/Account For Operations |
| BQ | Provide Bachelor Quarter Occupancy |
| CO | Process Construction Work Order |
| DG | Develop Guidance |
| EN | Protect The Environment |
| FI | Inspect Facilities |
| HO | Provide Family Housing Occupancy |
| IH | Provide Interment Services |
| LB | Report Actual Labor And Expenses |
| MB | Prepare For Mobilizations & Disasters |
| MD | Develop Information Technology |
| MI | Implement Information Technology |
| MN | Perform Minor Maintenance/Housekeeping |
| MO | Operate Information Technology |
| OV | Oversee Performance Of Activities |
| PB | Provide Reusable Items |
| PR | Administer Personnel Programs |
| RC | Receive Guests and Visitors |
| RL | Maintain Customer Relations/Awareness |
| RP | Maintain Real Property Configuration |
| SO | Process Service Order |
| TB | Troubleshoot Problems And Issues |
| TC | Provide Technical Assistance |
| TR | Train personnel |
| WO | Process In-House Work Order |

| No. | Comment | Subject Code |
|---|---|---|
| 25. | Improve responsiveness of procurement process. Part of the problem is providing enough information on requests to order supplies or services. Also, supply personnel do not check on status of orders until order is 45 days or more old. Supply requests go through too many hands. Materials sold after in storage for more than a year. Not enough supply people during peak periods to handle needs. Priority system is abused; everything is hot. Because preventive maintenance is not being regularly performed, equipment breaks requiring priority requisitions to return equipment to operational status. Not clear on rules for contacting suppliers. Source identification can be a problem leading to unnecessary order cancellations or the purchase of inferior product. Units of issue are not always considered when supplies are ordered (lumber). Supply system works on 30-day cycles, DPW works in hours or days when responding to emergencies. Too many organizations and people are involved in process. | AG |
| 26. | Automatically generate late delivery letters on letterhead. | AG |
| 27. | Install a PC with printer to generate partial purchase receipts/redos. This now requires loading and aligning the printer. | AG |
| 28. | Hire more people in Supply. Takes too long at counter to obtain supplies. | AG |
| 29. | Replace old material handling equipment. | AG |
| 30. | Consolidate all storage under one 100,000 square foot roof. | AG |
| 31. | Determine value of IFS-M to supply. No perceived need. | AG |
| 32. | Service requests (including rentals of equipment, etc.) have no transaction register captured in FESS; only SAILS captures the delivery of the service. Services are more time consuming, many times needing Contracting involvement. Extensions of service require another set of documentation. | AG |

Subject Areas:

| | |
|---|---|
| AD | Provide Administrative Support |
| AG | Acquire Supplies & Services |
| BD | Budget/Account For Operations |
| BQ | Provide Bachelor Quarter Occupancy |
| CO | Process Construction Work Order |
| DG | Develop Guidance |
| EN | Protect The Environment |
| FI | Inspect Facilities |
| HO | Provide Family Housing Occupancy |
| IH | Provide Internment Services |
| LB | Report Actual Labor And Expenses |
| MB | Prepare For Mobilizations & Disasters |
| MD | Develop Information Technology |
| MI | Implement Information Technology |
| MN | Perform Minor Maintenance/Housekeeping |
| MO | Operate Information Technology |
| OV | Oversee Performance Of Activities |
| PB | Provide Reusable Items |
| PR | Administer Personnel Programs |
| RC | Receive Guests and Visitors |
| RL | Maintain Customer Relations/Awareness |
| RP | Maintain Real Property Configuration |
| SO | Process Service Order |
| TB | Troubleshoot Problems And Issues |
| TC | Provide Technical Assistance |
| TR | Train personnel |
| WO | Process In-House Work Order |

| No. | Comment | Subject Code |
|---|---|---|
| 33. | FESS isn't utilized to its fullest extent; e.g., ASRs are converted into #3953s. Skip ASR and allow electronic changes to the #3953 (since funds are already authorized by the ASER). | AG |
| 34. | Supply Division and DOC log similar data; provide means to enter data only once for both systems (FESS and SAACON). | AG |
| 35. | Avoid duplicate obligations; e.g., three items ordered and four received, and the fourth is allowed to be kept as the order quantity. | AG |
| 36. | Establish an automated system for authorizations, that considers the Common Table of Allowances and Table of Distribution Allowances. Avoid delays for items like Environments 15 cubic yard dump truck. | AG |
| 37. | The FESS to SAILS data feed is approximately two days behind affecting responsiveness to correcting problems. This process should be improved. | AG |
| 38. | SAACON needs to be expanded to support the needs of large supply, services, and construction contracting. | AG |
| 39. | Provide better understanding of Budget and Administration systems. Need empathy for line people. | BD |
| 40. | Budget re-approval cycle has too much paperwork and too many memos. | BD |
| 41. | The DPW needs to have the authority to purchase its own ADP equipment without going through Directorate of Information Management (DOIM). | BD |
| 42. | Authorize signatory authority (up to $5000) for certain Engineering personnel when unforeseen problems arise during ongoing projects. | CO |
| 43. | Establish better coordination between DPW personnel, contractor representatives and facility managers. | CO |
| 44. | JOCs are great for shortening time, but impact statements and reviews by regulatory agencies take time. We can't always expedite! Some of this activity appears too expensive. How can we get the flexibility of JOC at the price of doing the work in-house? | CO |

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|---|---|---|
| 45. | Make contract modifications become effective on the first of the month. The administrative cost of initiating a modification is $250 per modification. | CO |
| 46. | Let contractors type and submit their own DD250's (request for payment). Standardize the payroll form for all contractors. | CO |
| 47. | Improve the time required by Environmental to perform assessments for projects. Some contracts have been sent to DOC without them (with permission from the Colonel and Dennis) but these assessments are supposed to be completed before the project goes to DOC. | CO |
| 48. | Design for support maintainability; that is, 19 year old soldiers, e.g., vandal-proof latrines. Bench buildings for design excellence. | CO |
| 49. | The instability in the Project Priority list causes general productivity loss. Dollars have too much impact but do not necessarily reflect reality. Need should carry more weight in establishing priorities. Too many people have the authority to create changes in the priority list: Colonel, Deputy director, Business Management, Facilities Maintenance and Engineering Chief. | CO |
| 50. | Schedule design reviews (by Colonel or Wayne Kiser) at 30% and 70% of completion, instead of when designs have been completed. | CO |
| 51. | The year-end "use it or lose it" philosophy creates costly work and disturbs priorities. | CO |
| 52. | Provide better contract specifications and definitions to minimize the need for modifications after contract award. | CO |
| 53. | Need to reorganize project folders. Folders are becoming too large to handle. | CO |
| 54. | Provide standard contract specifications on engineering PC's to reduce review and development time. Need additional CADD software. Provide temporary secretarial help during periods of heavy specification writing. During the period of May-July, current secretary spends up to 90% of her time doing nothing but processing specifications. | CO |

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| 55. | Reduce the amount of time engineering spends on inspection documentation and/or provide inspectors with tools to expedite the documentation process (hand held tape and video recorders). | CO |
| 56. | Need to update engineering data standards, databases and floor plans. | CO |
| 57. | Release environmental money (free to Fort Sill). | EN |
| 58. | Submit supply installation description, etc. only once a year. (Reference Pest Management Plan to TRADOC). | EN |
| 59. | Establish a building (structure) history system to keep records of application and to establish audit trails. Look into the Navy system for pest control inventories. | EN |
| 60. | Ensure Maintenance works on fire equipment first, as required by fire prevention regulations. Provide mechanics trained to work on fire equipment. Do preventive maintenance on fire equipment instead of waiting until equipment fails. provide training to firemen to perform preventive maintenance. | FD |
| 61. | Clear up confusion over responsibilities for hazardous materials emergencies between Fire Department and Environmental Department. | FD |
| 62. | Improve the fire extinguisher control and servicing process. Shouldn't have to replace so many extinguishers. Fire extinguishers are supposed to remain with real property. | FD |
| 63. | Pay firemen for overtime at regular overtime rates. | FD |
| 64. | Should have specialists or fully trained firemen to do alarm maintenance. | FD |
| 65. | Add Fire Department personnel to meet regulation-based manpower levels. | FD |
| 66. | Expand Fire stations to accommodate current equipment. | FD |
| 67. | Include fire department in standard billeting upgrade considerations. Firemen sleep at the fire stations. Quarters are cramped, old and have limited restroom facilities. | FD |

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| No. | Comment | Subject Code |
|---|---|---|
| 68. | Implement a computer-aided dispatch system. | FD |
| 69. | Replace alarm system (currently telephone-based) with radio controlled version. | FD |
| 70. | Eliminate fire reports on fires of limited damage. Establish a higher dollar threshold, currently reporting on all fires involving damage greater the $1. | FD |
| 71. | Buy commercial fire fighting equipment instead of Mil Spec equipment. Do not purchase prototype equipment until tested for use. | FD |
| 72. | Provide housing with authority over construction projects from conception through completion. | HO |
| 73. | Time is lost bringing HOMES system up and taking it down. | HO |
| 74. | Hire more people in Housing and provide necessary training. | HO |
| 75. | Provide funding for upgraded equipment (HVAC, shower pans, roofs). | HO |
| 76. | Eliminate waste associated with accounting for cost per dwelling unit in family housing. | HO |
| 77. | Provide access to Post Locator to find military personnel. | HO |
| 78. | Improve the HOMES system. System response time is very slow. | HO |
| 79. | Eliminate time card and L&E handling problems and improve dial up reliability. | LB |
| 80. | Integrate IFS-M and STARSIPS. Use system to pose L&Es. Eliminate redundancy between L&Es and time cards. Computerize time cards. | LB |
| 81. | Upgrade Personal Computer capabilities (need more speed). | MI |
| 82. | Fix Supply computer terminal (possible cable problem). | MI |
| 83. | Investigate the use of CD ROM to replace microfiche (AMDF) manipulation. | MI |
| 84. | Provide a modem for dial-up to other depots (like with GSA). | HO |

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| No. | Comment | Subject Code |
|---|---|---|
| 85. | Purchase IP Plot ($180 each and 4 needed). | HO |
| 86. | Purchase additional/improved computer software and hardware. | MI |
| 87. | Reduce "unit of issue" to "unit of order" conversion errors. | MI |
| 88. | Reduce the use of carbon-back computer paper within the installation. Many reports are sent to recycling without ever being decollated, obviously copies were never used. | MO |
| 89. | Investigate the usage of 80-column cards within the installation. Is anyone using them? | MO |
| 90. | Maintain a level of shop stock in Data systems for repair of computer hardware. | MO |
| 91. | DPW assumed additional responsibilities without additional help. | OV |
| 92. | Establish 1-hour lunch period; it would be a morale booster. | OV |
| 93. | Establish better coordination with AG personnel. There is a duplication of responsibilities between the DPW Cemetery Administration and the AG's Casualty Office. Need additional authority over grounds personnel who are assisting in the cemetery. Takes too many people and shops to bury someone. | OV |
| 94. | Accept advice and respect expertise of housing chief and staff. | OV |
| 95. | Determine value of Special Duties program. Time is being spent picking up and delivering SD prisoners to work sites. | OV |
| 96. | Provide road-worthy vehicles to Environmental. | OV |
| 97. | Accomplish all design work in-house. This would give DPW total control over projects and the work could be done faster and cheaper. | OV |
| 98. | Determine whether unused copier paper is being recycled. | OV |
| 99. | Improve timeliness of information flowing through the organization. Need to get performance appraisals and suspenses on time and accurately. Many times suspenses arrive after the due date. | OV |

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| No. | Comment | Subject Code |
|---|---|---|
| 100. | Make the Director a civilian position. | OV |
| 101. | Improve coordination between departments and divisions. Different divisions work on same projects without knowledge of the other. There is a lack of communication with management. BMD should work more closely with the shops, instead of simply dictating responses. Departments/divisions should help solve each other's problems in addition to identifying them. Some organizations are perceived to be a nuisance within DPW. Get more recognition outside the organization than within. There doesn't seem to be equal sacrifices when times get hard. Accept the opinion and advise of Environmental on environmental issues. | OV |
| 102. | Reach decisions at meetings. Provide effective meeting training. | OV |
| 103. | Assign and coordinate work better. Actions are moved instead of fixed in place to make people happy (too much time spent duplicating, verifying and checking each others work). People ask questions that they should research themselves. People should be responsible for their own mistakes. Instructions should be written down. System checks and balances should be left to do their work, and there shouldn't be so much second-guessing. Have to log-in/log-out correspondence to fend off accusations of non-responsiveness. | OV |
| 104. | Provide a work-at-home program, with computers tied into system through modems. | OV |
| 105. | Do not always have the right equipment to do jobs right. Plumbers have the only back hoe and have to schedule its use. | OV |
| 106. | Establish a Long Range Plan for ADP with milestones. | OV |
| 107. | Determine whether number of people sufficient to accomplish expected level of efforts. | OV |
| 108. | Provide vehicle maintenance in a timely manner. | OV |
| 109. | Provide beepers to all crews working at remote sites. | OV |

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| 110. | Pay on improvement ideas in a timely manner. | OV |
| 111. | Do away with the internal controls program documentation. This is only a paperwork shuffle. | OV |
| 112. | Get Supply out of the temporary loan business (for lawn maintenance equipment). Give an allotment of equipment maintenance to self-help. | PB |
| 113. | Improve time for HVAC to repair/salvage appliance property book items. | PB |
| 114. | Encourage Housing to keep new/replacements item instead of replacing because of aesthetics. | PB |
| 115. | Incident information should be directly entered onto Report of Surveys; i.e., generated by the person who is responsible for the damage. | PB |
| 116. | Increase the amount/cost of hand-receipt items to more realistic levels. Improve hand-receipt procedures. | PB |
| 117. | Establish a common stacking adapter for bunk beds so that one type would support all type beds. Could save money and provide a safer fit. | PB |
| 118. | Centralize storage equipment to reduce quantities required. | PB |
| 119. | Automate the sub hand-receipt process at the section level. | PB |
| 120. | Issues vouchers/kits to each craftsman for durable hand tools. Develop a kit of tools for each craft. | PB |
| 121. | Avoid moving furniture during unit moves. Use built-in wardrobes, for instance | PB |
| 122. | Use bar-coding for check-out/check-in of FMO property items. | PB |
| 123. | Receipt of a property book item (from hand-receipt) should automatically update its issue; re: Facilities Engineering Property Book system. | PB |
| 124. | Support in-house personnel in their pursuit of licenses with awards or reimbursements. | PR |
| 125. | Reduce the time it takes to secure appropriated-funded personnel. | PR |

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| 126. | Reduce the use of IOC employees. IOC employees cause problems with regularly employed personnel. Need to hire them as either part or full time employees. | PR |
| 127. | Manpower authorizations should be controlled better. Go to Management to the Civilian Budget MCB) system. Lift manpower constraints. Manpower and Staffing Standards, Work Measurement, Manpower Studies go away and hire people based on what the dollars and workload demands. | PR |
| 128. | Performance appraisals are counter-productive. | PR |
| 129. | Ensure that Service Orders have customer phone numbers. | SO |
| 130. | Reduce the number of Service Orders recorded incorrectly. | SO |
| 131. | Establish a better system for handling customer service. | SO |
| 132. | Completed Service Orders can be re-opened if one member of crew does not indicate Service Order completion. | SO |
| 133. | Provide more training for firemen. | TR |
| 134. | Send current personnel to real property management seminars (1 week). | TR |
| 135. | Need fire fighter training area. Current area closed by EPA. | TR |
| 136. | Do more cross-training between branches. Increase understanding between branches regarding responsibilities and operations. | TR |
| 137. | Have training classes for supervisors on how to complete performance appraisals correctly. | TR |
| 138. | Establish training program for hiring and training environmental rookies. | TR |
| 139. | Provide education and training within the directorate for Time Cards, L&Es, Service Orders, Work Orders, Contract Administrator, and Correspondence. | TR |
| 140. | Provide customer service training for personnel. | TR |
| 141. | Provide annual technical training for employees. | TR |

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|---|---|---|
| 142. | Conduct on-site Corp of Engineers General Construction School for inspectors/monitors on a regular basis (every 1 or 2 years). Also provide training in negotiation techniques. | TR |
| 143. | Allow Environmental to estimate asbestos removal requirements or train Estimators to do this function efficiently and effectively. | WO |
| 144. | Work with Housing to educate housing occupants regarding what constitutes an emergency. Most night calls are not emergencies. | WO |
| 145. | Work with State Historical Preservation Organization (SHIPO) to improve the time required to approve design work on buildings over 50 ears old. | WO |
| 146. | Need to reduce time housing units are under maintenance. | WO |
| 147. | Reduce the time and effort required to track and process work orders. Need in ensure that work orders are not closed without work actually be accomplished. Too many old work orders in system. A significant number or work orders are no longer valid. Need to better understand the work order priority system. | WO |
| 148. | Do a better job of understanding customer requirements and of identifying work scopes at job sites. | WO |
| 149. | Increase Work Order thresholds from $750 to $1,000. | WO |
| 150. | Avoid duplication of effort between Program Managers, Foremen, and Estimators. Establish a scheduler position that schedules, provides time lines, schedules weeks in advance and not weekly. | WO |
| 151. | Develop a Sportsman customer database that serves multiple retail applications; e.g., like a customer and invoicing database. | WO |
| 152. | Relocate emergency WO phone responsibility. Firemen have little understanding of the nature of facilities emergencies such as plumbing, roofing, heating; and are not skilled to deal with these problems. | WO |
| 153. | Provide data recorder for Engineering Division. This will allow for generation of topographic drawings from data recorder. | WO |

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| 154. | Need multi-craft people to do one stop fixes. | WO |
| 155. | Establish better ad hoc query access to obtain analytical information. | WO |
| 156. | Improve timeliness of information in IFS-M. Currently manual logs are maintained to ensure currency of information. | WO |
| 157. | Improve the synchronization between work orders in IFS-M and FESS. | WO |

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# Appendix D: Fort Sill Improvement Opportunities by Subject Area

| Subject Area | Category Definition | Potential Yearly Cost Savings in $1000 |
|---|---|---|
| **AD** | **Provide Administrative Support** | |
| 1 | Computerize Standard Forms | 400 |
| 2 | Expedite Suspense Processing | (undetermined) |
| 4 | Establish PM for Computer Hardware | (undetermined) |
| 5 | Bill Yearly for Small Customers | 178 |
| 10 | Eliminate Manual Logs | (undetermined) |
| 12 | Provide Admin/Secretarial support | (undetermined) |
| **AG** | **Acquire Supplies & Services** | |
| 25 | Improve Procurement Process | (undetermined) |
| 26 | Automatic Late Delivery Letters | 45 |
| 32 | Service Requests Integration (FESS/SAILS) | 93 |
| 37 | Improve FESS to SAILS Integrations | 93 |
| **BD** | **Budget/Account for Operations** | |
| 39 | Establish Budgeting/Admin System Knowledge | (undetermined) |
| 40 | Reduce Budgeting Re-approval Paperwork | (undetermined) |
| **BQ** | **Provide Bachelor Quarter Occupancy** | |
| **CO** | **Process Construction Work Order** | |
| 43 | Coordination with Construction./Facility Managers | 680 |
| 52 | Prepare Better Contract Specs | 129 |
| **DG** | **Develop Guidance** | |
| **EN** | **Protect the Environment** | |
| **FI** | **Inspect Facilities** | |
| **HO** | **Provide Family Housing Occupancy** | |
| **IH** | **Provide Internment Services** | |
| **LB** | **Report Actual Labor and Expenses** | |
| **MB** | **Prepare for Mobilizations & Disasters** | |
| **MD** | **Develop Information Technology** | |
| **MI** | **Implement Information Technology** | |
| **MN** | **Perform Minor Maintenance/Housekeeping** | |
| **MO** | **Operate Information Technology** | |

| Subject Area | Category Definition | Potential Yearly Cost Savings in $1000 |
|---|---|---|
| **OV** | **Oversee Performance of Activities** | |
| 99 | Improve Information Flow | (undetermined) |
| 101 | Improve Department/Division coordination | (undetermined) |
| 103 | Assign/Coordinate Work Better | (undetermined) |
| 104 | Provide Work-At-Home Program | (undetermined) |
| **PB** | **Provide Reusable Items** | |
| 123 | Auto Property book Items Issue/receipt | 174 |
| **PR** | **Administer Personnel Programs** | |
| 125 | Reduce personnel hiring Time | (undetermined) |
| **RC** | **Receive Guests and Visitors** | |
| **RL** | **Maintain Customer Relations/Awareness** | |
| **RP** | **Maintain Real property Configuration** | |
| **SO** | **Process Service Order** | |
| 130 | Eliminate Incorrect SO Entries | 8478 |
| 131 | Great Customer Service System | 8764 |
| **TB** | **Troubleshoot Problems and Issues** | |
| **TC** | **Provide Technical Assistance** | |
| **TR** | **Train Personnel** | |
| 136 | Cross-train Branch Personnel | (undetermined) |
| 137 | Performance Appraisal Training | (undetermined) |
| 138 | Establish Environmental Training Program | (undetermined) |
| 139 | Training Time/L&E/SO/WO | (undetermined) |
| 140 | Provide Customer Service Training | (undetermined) |
| 141 | Provide Annual Technical Training | (undetermined) |
| **WO** | **Process In-House Work Order** | |
| 147 | Reduce WO Tracking/Processing | 8816 |
| 148 | Improve Work Scope Definition | 316 |
| 150 | WO Process Duplication of Effort | 436 |
| 154 | Need Multi-craft People | 8505 |
| 155 | Establish Information Ad Hoc Query Access | 225 |
| 156 | Improve IFS-M Information Timeliness | (undetermined) |
| 157 | Synchronize WOs in IFSM/FESS | 73 |

Based on the above analysis, the subject areas with the greatest potential cost savings are "Process In-House Work Order" and "Process Service Order. The subject areas with the most improvement opportunities are "Provide Administrative Support, "Train Personnel, and "Process In-House Work Order."

# Appendix E: Building the KWS Database

**Event Name:** _____

_____

| Tasks | Date Due | Subtasks | Date Due |
|---|---|---|---|
| _____ | _____ | _____ | _____ |
| | | _____ | _____ |
| | | _____ | _____ |
| | | _____ | _____ |
| | | _____ | _____ |
| | | _____ | _____ |
| | | _____ | _____ |
| | | _____ | _____ |
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| _____ | _____ | _____ | _____ |
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| | | _____ | _____ |
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| | | _____ | _____ |
| | | _____ | _____ |
| | | _____ | _____ |
| | | _____ | _____ |
| | | _____ | _____ |
| | | _____ | _____ |

SUBTASK: _____

ASSIGNED BY: _____

ASSIGNED TO: _____

PERFORMED BY: _____

SKILL LEVEL: _____

DATE DUE: _/ /_ DURATION: ____

DEPENDENCIES:

Predecessors: _____

Successors: _____

PRIORITY: (Please check one)

_ Critical

_ Important

_ Normal

STATUS: (Please check one)

_ Not Started

_ Started

_ Completed

_ OBE

FREQUENCY OF OCCURRENCE: (Please check one)

_ Ad Hoc

_ Cyclic (Please check one)

_ weekly

_ monthly

_ quarterly

_ yearly

**TOOLS:**

**Software:** _____

**Data:** _____

**Access Path:** _____

**Authorizations:** _____

**Steps:**

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

# Appendix F: Prosoft Windows 3.1 Course Outline–Microsoft Windows®

## Description

Microsoft Windows® 3.1 is a desktop work environment. The Windows graphical user interface (GUI) allows the user to perform tasks by pointing and clicking rather than typing in cryptic DOS commands.

## Student Skills

- Identify the parts of the Windows screen.
- Size and move windows and make menu selections.
- Run applications programs.
- Use the Windows Program, File Manager, and Print Manager.
- Customize their Windows program using the Control Panel.
- Copy information from application to application using the Clipboard.
- Embed/link information from application to application using OLE and the Clipboard.
- Preview the Windows Accessory programs.

## Prerequisites

None

## Course Length

1 Day

## Software Version

Windows 3.1

## Microsoft Windows Student Outline

I. Overview of Microsoft Windows
   A. Graphical User Interface
   B. Running Windows
      1. Real Mode
      2. Standard Mode
      3. Enhanced Mode
   C. Getting Help
   D. Exiting Windows

II. Windows Screen
   A. Desktop
   B. Windows
      1. Title Bar
      2. Minimize and Maximize Boxes
      3. Control Box
      4. Scroll Bars
   C. Icons
   D. Menus
   E. Dialog Boxes

III. Program manager
   A. Running programs or Applications
   B. Switching Between Programs
   C. Task List

IV. File Manager
   A. Switching Drives
   B. Directories
      1. Making and Removing
      2. Directory Window
      3. Options
   C. Searching for Files
   D. Selecting Files
   E. Moving Files

F. Copying Files
G. Deleting Files
H. Formatting disks
I. Copying Diskettes

V. Control Panel
A. Screen Colors
B. Desktop Pattern, Wallpaper, and Screen Saver
C. Printers

VI. Print Manager

VII. Clipboard
A. Copying to the Clipboard
B. Passing from the Clipboard

VIII. Introduction to Microsoft Windows Accessory Programs
A. Write
B. Paintbrush
C. Notepad
D. Cardfile
E. Calendar
F. Clock
G. Games

IX. Review

# Appendix G: KWS Course Outline

## Course Outline–Real Property Team

### *Day 1–Monday, 3 May 1993*

| Time | Subject |
|---|---|
| 0800 | Introduction |
| 0900 | The To Do Window<br>Navigation<br>Add/Modify/Delete<br>Command Menu |
| 1030 | FILE Command Menu |
| 1100 | Navigate via the Event Manager |
| 1130 | Summarize & Answer Questions |
| 1200 | Lunch |
| 1300 | Introduction/Review |
| 1330 | Add/Modify/Delete Official Task in Event Manager |
| 1430 | Attachments (Basic) |
| 1530 | Review of Day 1 |

### *Day 2–Tuesday, 4 May 1993*

| Time | Subject |
|---|---|
| 0800 | Review of Day 1 |
| 0830 | Do Its (Basic) |
| 0900 | Personal Preferences |
| 1000 | Advanced Attachments/Note |
| 100 | Advanced Do Its |
| 1200 | Lunch |
| 1230 | Predecessors/Successors |

*NOTE: The instructors will be available the remainder of the day to work with you on specific functional areas with KWS.*

***Day 2–Tuesday, 4 May 1993***

| Time | Subject |
|---|---|
| 1300 | Work Groups |
| 1330 | Queries |
| 1400 | Changing Levels |
| 1430 | Cyclic Tasks/Events |
| 1500 | Other Features |
| 1530 | Summary of Training |

***Day 3–Wednesday, 5 May 1993***

| Time | Subject |
|---|---|
| 0800-1000 | Walkthrough of Knowledge Base Conducted with trainees in individual work areas |

## Course Outline–Production Control Team

***Day 1–Wednesday, 5 May 1993***

| Time | Subject |
|---|---|
| 0800 | Introduction |
| 0900 | The To Do Window<br>Navigation<br>Add/Modify/Delete<br>Command Menu |
| 1030 | FILE Command Menu |
| 1100 | Navigate via the Event Manager |
| 1130 | Summarize & Answer Questions |
| 1200 | Lunch |
| 1300 | Introduction/Review |
| 1330 | Add/Modify/Delete Official Task in Event Manager |
| 1430 | Attachments (Basic) |
| 1530 | Review of Day 1 |

*NOTE: The instructors will be available the remainder of the day to work with you on specific functional areas with KWS.*

### *Day 2–Thursday, 6 May 1993*

| Time | Subject |
|---|---|
| 0800 | Review of Day 1 |
| 0830 | Do Its (Basic) |
| 0900 | Personal Preferences |
| 1000 | Advanced Attachments/Note |
| 1100 | Advanced Do Its |
| 1200 | Lunch |
| 1230 | Predecessors/Successors |
| 1300 | Work Groups |
| 1330 | Queries |
| 1400 | Changing Levels |
| 1430 | Cyclic Tasks/Events |
| 1500 | Other Features |
| 1530 | Summary of Training |

### *Day 3–Friday, 7 May 1993*

| Time | Subject |
|---|---|
| 0800-1000 | Walkthrough of Knowledge Base Conducted with trainees in individual work areas |

*NOTE: The instructors will be available the remainder of the day to work with you on specific functional areas with KWS.*

# Appendix H: Fort Eustis Task Durations (Before)

## Coordinate Work

| Customer Generate Work Order | Duration |
|---|---|
| Receive 4283 | 5days, 4hours |
| 1. Verify 4283 | 2hours |
| 2. Route to Environmental Office | 2.5days |
| 3. Route to Safety Office | 2.5days |
| 4. Input 4283 into IFSM | 2hours |
| Establish & Maintain Work Request | |
| Provide Work Status | |
| Produce Production Shop Report (weekly) | 2days |
| Generate Draft Report | |
| 1. Print draft copy of report | 5hours |
| Get New Information | |
| 1. Have Chief, Production Control Section update draft | 1hours |
| 2. Get Lotus report from Scheduler sorted by project start date | 1hours |
| Make comparison | 1hours |
| 1. Compare new information with last week's report | |
| Produce final report | 8hours |
| 1. Make changes in Harvard Graphics file | |
| 2. Delete completed projects over 2 weeks old | |
| 3 Sort by estimated shop date | |
| 4. Print report | |
| 5. Make 4 complete copies | |
| 6. Make 1 copy with start dates | |
| Produce Project Status Report (weekly) | |
| Prepare report | 3hours |
| 1. Query IFS-M | |

## Coordinate Work

| | |
|---|---|
| 2. Print Report | |
| Produce Project List (monthly) | |
| Query IFS-M | 2hours |
| 1. Run IFS-M query "L ACCT over 15K NO FH" | |
| Receive information from other sources | 30days |
| 1. Receive edited hard copies of previous lists. | |
| 2. Receive other suggested changes. | |
| Update and Prepare Report | 4hours |
| 1. Make changes in IFS-M | |
| 2. Make changes in dBase file | |
| 3. Kathy copy dBase file to floppy diskette and give to Gail | |
| 4. Gail: Merge data | |
| 5. Gail: Print Project List | |
| 6. Distribute | |

## Estimate Work

| Estimate Work Request | Duration |
|---|---|
| Perform Budget Estimate | 6days, 20min. |
| Do Budget Estimate | |
| Examine Work Request | |
| 1. Do site visit of proposed work | 1hours |
| 2. Review with requestor the work required | 1hours |
| Execute LOTUS 150 Spreadsheet | |
| 1. Look up all information needed to complete job in MEANS and historical data | 2hours |
| 2. Transfer information from MEANS to LOTUS 150 spread-sheet. | 1hours |
| 3. Spreadsheet automatically calculates cost | .5hour |
| If NOT Reimbursable Work | |
| 1. Put in folder to accomplish detail estimate or folder to hold until further notice | 10min. |
| If Reimbursable Work | |
| 1. Go into PROFS | 10min. |

## Estimate Work

| | |
|---|---|
| 2. Send work request to ask for funds transfer | .5hour |
| 3. Await receipt of funds | 1week |
| 4. Funds are received | |
| 5. Determine if work is inhouse or contract | 1hour |
| Retrieve information from 4283 | 1hour |
| 1. Retrieve job site information, document number, facility number, requestor name and telephone number, and information requested | |
| Perform Detailed Estimate | 1day |
| Define Phases | 2hour |
| Estimate Phase Time | 2hour |
| Estimate Material Requirements | |
| 1. Fill out Bill of Materials (IFS-M): Labor hours for In-House & Specifications for Contract | 1hour |
| 2. Fill out Purchase Request: In-House for Supply & DOC for Contract | 1hour |
| Perform Determination of kind of Work | |
| 1. Is the work In-House | 1hour |
| 2. Is the work to be done by Contract | 1hour |
| Maintain Standards | |
| Maintain Factors | |
| Maintain Estimating Standards | |
| Maintain Supply Catalogue | |
| | |

## Inspect Work

| | |
|---|---|
| In-House | 1day |
| 1. Answer questions | |
| 2. Fill out inspection form | |
| Inspect Contract Work | 1day |
| 1. Answer questions | |
| 2. Fill out inspection form | |

## Approve Work

| | |
|---|---|
| Score 4283 | 1day |
| 1. Local Score (Eustis) | |
| 2. Use TRADOC system | |
| 3. BMAR Scoring | |
| Check funding | 1hour |
| 1. Is the work funded | |
| 2. Is the work not funded | |
| Determine resources (manpower) | 4hour |
| 1. In-House | |
| 2. Contract | |
| 3. U-DO-IT | |
| 4. Troop | |
| Estimator Scheduled | 1hour |
| 1. Chief, Production Control schedules job to an estimator | |
| Fund Approval | 1week |
| 1. Get approval for materials | |
| 2. Get approval for contract work | |
| 3. Get approval for troop work | |
| 4. Get approval to put job on hold | |
| Work approval | |
| 1. Receive work approval | 1week |
| 2. If contract, send 4283 to DOC | 1hour |
| 3. If inhouse, send 4283 to Supply/MC | 1hour |
| 4. Send 4283 to shops (U-DO-IT, Troops, inhouse) | 1hour |

## Schedule Work

| | |
|---|---|
| Revise IFS-M | |
| 1. Get updated information from Chief, Production Control | 1hour |
| 2. Get updated information from DEH Warehouse | 1hour |
| 3. Run Customer Service Menu query in IFS-M | 1hour |
| 4. Letter N or O to bring up W/O & change status. | |
| 5. Change status in IFSM | 1hour |

| | |
|---|---|
| Revise LOTUS File | 2hour |
| 1. Use IFS-M data to update LOTUS file | |
| 2. Delete completed jobs | |
| 3. Delete cancelled jobs | |
| Send Work to Shops | 1hour |
| 1. Send 4283 to shop | |
| | |

## Manage RPF Utilization

| Document RPF Utilization (ICARPUS) - Ft Eustis | Duration - @25% time |
|---|---|
| Initiate update of report. | |
| Review previous year's submission. | 8 hrs |
| Separate out and copy sections by activity. | 4 hrs |
| Access form for cover letter. | 10 min |
| Make changes to form letter as needed. | 30 min |
| Print out cover letter & route for signatures. | 20 min |
| Enclose respective sections of report. | 4 hrs |
| Send cover letter and sections to each activity requesting up-dated information. | 1 hr |
| Receive changes to report. | 2-4 wks |
| Incorporate changes received into final draft. | |
| Access file of sections with changes. | 4 hrs |
| Make changes and save in file. | 16 hrs |
| Prepare final copy of report. | |
| Prepare copy of report for approval of Garrison Cmdr., RPO, & DEH. | |
| Print out signature page. | 10 min |
| Highlight changes on copy of report. | 3 hrs |
| Attach signature page to copy & route for signatures. | 10 min |
| Receive copy with signatures & comments. | 1 wk |
| Print out final copy of report. | 1 hr |
| Include updated photographs of facilities as needed. | 4 hrs |
| Include cover for report binder. | 5 min |
| Prepare transmittal letter. | |
| Access form for letter. | 5 min |

## Manage RPF Utilization

| | |
|---|---|
| Make changes to form letter as needed. | 10 min |
| Print out transmittal letter & route for signature. | 20 min |
| Send final copy to TRADOC. | 10 min |
| Prepare report for distribution. | |
| Send copy of highlighted report to DOIM-Editorial. | 10 min |
| Receive proofed copy of report from DOIM-Ed. | 1-2 wks |
| Make editorial changes to version on file & print. | 4 hrs |
| Prepare transmittal letter for distribution. | |
| Access form for letter. | 10 min |
| Make changes to letter as needed. | 30 min |
| Print out letter & route for signature. | 20 min |
| Send report to DOIM with printing & distribution instructions. | 30 min |
| Receive call from distribution point. | 16 hrs |
| Attach "for official use only" cover on reports. | 1 hr |
| File a copy of report. | 10 min |
| Document RPF Utilization (ICARPUS) - Fort Story | Duration - @25% time |
| Send previous year's submission to PAO with request for update of information. | 10 min |
| Receive changes to report from PAO | 2-4 wks |
| Incorporate changes received into final copy of report | |
| Access file of section with changes. | 4 hrs |
| Make changes and save in file. | 16 hrs |
| Prepare final copy of report | |
| Prepare copy of report for approval of Garrison Cmdr., RPO, & DEH | |
| Print out signature page. | 10 min |
| Highlight changes on copy of report. | 3 hrs |
| Attach signature page to copy & route for signatures. | 10 min |
| Receive copy with signatures & comments. | 2 wks |
| Print out final copy of report. | 1 hr |
| Include updated photographs of facilities as needed. | 4 hrs |
| Include cover for report binder. | 5 min |
| Prepare transmittal letter. | |
| Access form for letter. | 5 min |

## Manage RPF Utilization

| | |
|---|---|
| Make changes to form letter as needed. | 10 min |
| Print out transmittal letter & route for signature. | 20 min |
| Send final copy to TRADOC | 10 min |
| Prepare report for distribution. | |
| Send copy of highlighted report to DOIM-Editorial. | 10 min |
| Receive proofed copy of report from DOIM-Editorial. | 1-2 wks. |
| Make editorial changes to version on file. | 4 hrs |
| Prepare transmittal letter for distribution. | |
| Access form for letter. | 10 min |
| Make changes to letter as needed. | 30 min |
| Print out letter & route for signature. | 20 min |
| Send report to DOIM with printing & distribution instructions. | 30 min |
| Receive call from distribution point. | 16 hrs |
| Attach "for official use only" cover on reports. | 1 hr |
| File a copy of report. | 10 min. |
| Control Space Allocation | Duration - @25% time |
| Receive request for space. | |
| Add request for space to agenda of next Facility/Space Management Committee Meeting | |
| Access file for agenda for next meeting. | 10 min |
| Add request for space as a new agenda item. | 10 min |
| Conduct meeting of Facility/Space Management Committee. | quarterly |
| Relay decision of committee to requestor of space | |
| Access form letter for response. | 10 min |
| Make changes to form letter as needed. | 20 min |
| Print out letter & route for RPO signature. | 20 min |
| Send letter to requestor. | 10 min |
| Set up meeting between RPO & Requestor to survey space | |
| Contact requestor & get available dates/times | 20 min |
| Check RPOs calendar & decide on date/time | 10 min |
| Notify requestor of meeting date/time | 10 min |
| Add property to gaining hand receipt | 1 wk 4 hrs |

## Process Grant Requirements

| Process new request for lease for outgrant | Duration - @25% time |
|---|---|
| Receive letter of request from activity. | |
| Write letter of availability. | |
| Access form for letter of availability. | 10 min |
| Make changes to form letter as needed. | 45 min |
| Run letter with appropriate address. | 10 min |
| Enclose report of availability. | |
| Access form for report of availability. | 10 min |
| Customize information in form letter. | 35 min |
| Print out report of availability. | 10 min |
| Enclose an as-built drawing. | |
| Obtain original drawing of area. | 15 min |
| Make 4-5 enlarged copies of specific area. | 15 min |
| Identify area with a circle on all 4-5 copies. | 15 min |
| Shade requested area with colored pencils on all copies | 1 hr |
| Enclose record of environmental consideration (REC). | |
| Access form letter. | 10 min |
| Pull in pertinent paragraphs. | |
| Access file containing environmental regulations. | 10 min |
| Retrieve specific paragraphs and insert in REC. | 20 min |
| Produce Preliminary Assessment Screening form (PAS). | |
| Access form for PAS. | 10 min |
| Fill in appropriate blanks. | 20 min |
| Route PAS to environmentalist for signature. | 4 hrs |
| Route letter & enclosures with Publication Correspondence Summary form 105 to Cmdr. | 10 min |
| Receive approved packet back from Cmdr. | 8 hrs |
| Forward packet on to TRADOC for approval. | 10 min |
| Receive copy of signed lease from activity. | 2 wks |
| Update list of outgrants for ICARPUS. | 30 min |
| Access file containing list of outgrants. | 10 min |
| Make changes to list as needed. | 30 min |
| File copy of signed lease. | 15 min |
| Process amendment of lease for outgrant | Duration - @25% time |

## Process Grant Requirements

| | |
|---|---|
| Receive letter of request from activity. | |
| Write letter of availability. | |
| Access form for letter of availability. | 10 min |
| Make changes to form letter as needed. | 45 min |
| Run letter with appropriate address. | 10 min |
| Enclose report of availability. | |
| Access form for report of availability. | 10 min |
| Customize information in form letter. | 35 min |
| Print out report of availability. | 10 min |
| Enclose an as-built drawing. | |
| Obtain original drawing of area. | 15 min |
| Make 4-5 enlarged copies of specific area. | 15 min |
| Identify area with a circle on all 4-5 copies. | 15 min |
| Shade requested area with colored pencils on all copies | 1 hr |
| Enclose record of environmental consideration (REC). | |
| Access form letter. | 10 min |
| Pull in pertinent paragraphs. | |
| Access file containing environmental regulations. | 10 min |
| Retrieve specific paragraphs and insert in REC. | 20 min |
| Produce Preliminary Assessment Screening form (PAS). | |
| Access form for PAS. | 10 min |
| Fill in appropriate blanks. | 20 min |
| Route PAS to environmentalist for signature. | 4 hrs |
| Route letter & enclosures with Publication Correspondence Summary form 105 to Cmdr. | 10 min |
| Receive approved packet back from Cmdr. | 8 hrs |
| Forward packet on to TRADOC for approval. | 10 min |
| Receive copy of signed lease from activity. | 2 wks |
| Update list of outgrants for ICARPUS. | 30 min |
| Access file containing list of outgrants. | 10 min |
| Make changes to list as needed. | 30 min |
| File copy of signed lease. | 15 min |
| Process renewal of lease for outgrant. | Duration - @25% time |
| Receive letter of request from activity. | |

## Process Grant Requirements

| | |
|---|---|
| Write letter of availability. | |
| Access form for letter of availability. | 10 min |
| Make changes to form letter as needed. | 45 min |
| Run letter with appropriate address. | 10 min |
| Enclose report of availability. | |
| Access form for report of availability. | 10 min |
| Customize information in form letter. | 35 min |
| Print out report of availability. | 10 min |
| Enclose record of environmental consideration (REC). | |
| Access form letter. | 10 min |
| Pull in pertinent paragraphs. | |
| Access file containing environmental regulations. | 10 min |
| Retrieve specific paragraphs and insert in REC. | 20 min |
| Produce Preliminary Assessment Screening form (PAS). | |
| Access form for PAS. | 10 min |
| Fill in appropriate blanks. | 20 min |
| Route PAS to environmentalist for signature. | 4 hrs |
| Route letter & enclosures with Publication Correspondence Summary form 105 to Cmdr. | 10 min |
| Receive approved packet back from Cmdr. | 8 hrs |
| Forward packet on to TRADOC for approval. | 10 min |
| Receive copy of signed lease from activity. | 2 wks |
| Update list of outgrants for ICARPUS. | 30 min |
| Access file containing list of outgrants. | 10 min |
| Make changes to list as needed. | 30 min |
| File copy of signed lease. | 15 min |
| Coordinate ingrant requests. | Duration - @25% time |
| Receive request for ingrant lease and completed 4283. | |
| Produce Purchase Request Commitment form 3953. | |
| Access blank form 3953. | 10 min |
| Input data from form 4283 into form 3953 as applicable. | 30 min |
| Print form 3953. | 10 min |
| Route form 3953 to Comptroller for addition of funding information. | 10 min. |
| Receive completed form 3953. | 2 wks |

## Process Grant Requirements

| | |
|---|---|
| File form 3953. | 10 min |
| Update list of ingrants for ICARPUS. | |
| Access file containing list of ingrants. | 10 min |
| Make changes to list as needed. | 20 min |

## Perform Space Management

| | |
|---|---|
| Produce utilization of admin/storage space report | Duration - @25% time |
| Write letter to HRHs requesting updated information. | |
| Access form letter. | 10 min |
| Make changes to form letter as needed. | 20 min |
| Access list of HRHs. | 10 min |
| Merge two files for personalized form letter. | 20 min |
| Enclose blank TCFE 1061. | 10 min |
| Enclose blank TCFE 1061A. | 10 min |
| Run off and enclose current hand receipt. | 2 hrs |
| Receive signed and dated hand receipt and forms. | 2 wks |
| Enter updated information in Hand Receipt Directory. | |
| Access Hand Receipt Directory file. | 10 min |
| Update information in file. | 20 min |
| Enter date of last sign off on hand receipt. | 10 min |
| Enter updated information in POC/Ph#/Date list. | |
| Access POC/Ph#/Date file. | 10 min |
| Update information in file. | 20 min |
| Compile information from TCFE 1061 & 1061A into DD 805. | |
| Gather information needed from completed 1061s & 1061As. | 30 min |
| Access DD 805 report software. | 10 min |
| Enter data in screens. | 1 hr |
| Transmit information contained in DD 805 to HQ DA. | 1 hr |
| Print out report for files. | 30 min |
| Maintain facility hand receipts | Duration - @25% time |
| Receive notification of change to hand receipt. | |

## Perform Space Management

| | |
|---|---|
| Set up meeting between RPO and losing HRH. | |
| Contact losing HRH & get available dates/times for meeting. | 15 min |
| Check RPOs calendar & decide on date/time. | 15 min |
| Notify losing HRH of meeting date/time. | 5 min |
| Complete TCFE Supply/AR405-70 (Facility Assign & Clearance Record) | |
| Fill in blanks on form appropriate for losing HR. | 1 hr |
| Send form to losing HRH for completeness of information and signature. | 10 min |
| Receive signed TCFE Supply/AR405-70 from losing HRH. | 1 wk |
| Fill in blanks on form appropriate for gaining HR. | 1 hr |
| Send form to gaining HRH for completeness and signature. | 10 min |
| Receive signed TCFE Supply/AR405-70 from gaining HRH. | 1 wk |
| Get RPO signature on both forms for final approval. | 5 min |
| Meet with losing HRH | |
| Inspect facility being transferred with losing HRH. | 1 hr |
| Verify information about facility on TCFE Supply/AR405-70. | 15 min |
| Collect facility keys. | 5 min |
| Remove property from losing hand receipt | |
| Open up file for losing hand receipt. | 10 min |
| Remove facility being transferred from hand receipt. | 5 min |
| Run off updated hand receipt. | 10 min |
| Send updated hand receipt to losing HRH for acceptance and signature. | 10 min |
| Receive signed hand receipt. | 1 wk |
| File hand receipt in appropriate file. | 5 min |
| Set up meeting between RPO and gaining HRH | |
| Contact gaining HRH & get available dates/times for meeting. | 15 min |
| Check RPOs calendar and decide on date/time. | 15 min |
| Notify gaining HRH of meeting date/time. | 5 min |
| Meet with gaining HRH | |
| Inspect facility being transferred with gaining HRH. | 1 hr |
| Verify information about facility on TCFE Supply/AR405-70. | 15 min |
| Sign over facility to gaining HRH | 5 min |

## Perform Space Management

| | |
|---|---|
| Issue facility keys to gaining HRH | 5 min |
| Maintain facility hand receipts (cont.) | Duration - @25% time |
| Add property to gaining hand receipt | |
| Open up file for gaining hand receipt. | 10 min |
| Add facility being transferred to hand receipt. | 5 min |
| Run off updated hand receipt. | 10 min |
| Send updated hand receipt to gaining HRH for acceptance and signature. | 10 min |
| Receive signed hand receipt. | 1 wk |
| File hand receipt in appropriate file. | 5 min |
| Make changes to building list (blue cover) | |
| Locate transferred facility in building list. | 5 min |
| Change HRH for building. | 5 min |
| Change other information as needed for list. | 10 min |
| Make changes to IFS-M | |
| Get copy of completed TCFE Supply/AR405-70 for losing and gaining HRs. | 10 min |
| Do a query on IFS-M to locate building being transferred. | 5 min |
| Make changes to appropriate fields in IFS-M as needed. | 10 min |

## Accomplish RPF Disposal

| | |
|---|---|
| Identify candidate for disposal | Duration - @25% time |
| Initiate selection process for disposal | |
| Review potential candidates for disposal from reduction in facilities program. | 1 hr |
| Rank potential candidates based on pre-determined criterion (age, condition, etc) | 1 hr |
| Select candidate | 30 min |
| Initiate disposal approval | |
| Prepare HUD survey | |
| Open up survey form | 10 min |
| Access building information file | 10 min |

## Accomplish RPF Disposal

| | |
|---|---|
| Fill in blanks with data specific to building candidate for demolition | 45 min |
| Make copy of survey for files | 10 min |
| Send HUD survey to DA thru TRADOC | 10 min |
| Receive report from HUD on suitability of building for reuse | 30-90 days |
| Coordinate Disposal | |
| Write Letter for Commander's signature to remove from inventory | |
| Access form letter | 10 min |
| Make changes to form letter as needed | 20 min |
| Print out letter | 10 min |
| Route letter to Commander for signature | 10 min |
| Receive signed letter from Cmdr. | 8 hrs |
| Prepare 1354 for removal of building from IFS-M | |
| Access form 1354 | 10 min |
| Fill in appropriate blocks | 45 min |
| Verify data in blocks | 1 hr |
| Get RPO signature | 20 min |
| Route through appropriate channels | 1 wk |
| Prepare GSA 4283 (Work Control) for building shutdown | |
| Access form 4283 | 10 min |
| Fill in appropriate blocks (shut off util, etc) | 45 min |
| Route to RPO for signature. | 5 min |
| Receive signed form from RPO | 20 min |
| Make a copy for file | 10 min |
| Prepare DA 377 (Building Detail Report) | |
| Access form 377 | 10 min |
| Fill in appropriate blocks | 45 min |
| Route for signatures. | 10 min |
| Receive signed form. | 4 hrs |
| Make a copy for files | 10 min |
| If estimated cost is < $25,000, send form to Installation Commander for approval | 10 min |
| If estimated cost is > $25,000, send form to TRADOC for approval | |

## Accomplish RPF Disposal

| | |
|---|---|
| Pass approval form to EP&S for contract for demolition | 10 min |
| Query/document disposal | |
| Receive 1354 for removal of building from IFS-M | 1 wk |
| Verify data on 1354 | 1 hr |
| Remove building information from IFS-M | 1 hr |

# Appendix I: Fort Eustis Knowledge Base

| Event/Task/Step Description | Do It Developed |
|---|---|
| **COORDINATE WORK** | |
| Customer Generate Work Order | |
| Receive 4283 | |
| 1) Verify 4283 | |
| 2) Route 4283 to Environmental Office | |
| 3) Route 4283 to Safety Office | |
| 4) Input 4283 into IFS-M. | YES |
| Establish & Maintain Work Request | |
| Provide Work Status | |
| Produce Production Shop Report | |
| a) Get New Information | |
| 1) Perform steps 2 through N. | YES |
| 2) Get information from IFS-M. | |
| 3) Get information from Scheduler's Lotus report. | |
| b) Verify Information | |
| 1) Verify and correct information. | YES |
| c) Produce Report | |
| 1) Perform steps 2 and 3. | YES |
| 2) Sort projects by estimated date to shop. | |
| 3) Remove projects that have been completed for over 2 weeks. | |
| 4) Perform steps 5 through 6. | YES |
| 5) Generate complete report. | |
| 6) Print copy of complete report. | |
| 7) Make 6 copies of the complete report. | |
| 8) Perform steps 9 and 10. | YES |
| 9) Generate subset of report for Supply. | |
| 10) Print copy of Supply report. | |

| Event/Task/Step Description | Do It Developed |
|---|---|
| 11) Make 2 copies of Supply report. | |
| 12) Perform steps 12 and 13. | YES |
| 13) Generate subset of report for Shop. | |
| 14) Print copy of Shop report. | |
| 15) Make 2 copies of Shop report. | |
| Produce Project Status Report | |
| Prepare Report | |
| 1) Perform steps 2 through N. | YES |
| 2) Access IFS-M. | |
| 3) Run IFS-M Query for project status. | |
| 4) Print report | |
| Produce Project List Report | |
| a) Receive Information from other Sources | |
| 1) Receive edited hard copies of previous lists | |
| 2) Receive other suggested changes | |
| b) Update and Query IFS-M | |
| 1) Make any needed changes to IFS-M. | YES |
| 2) Perform steps 3 through 5. | YES |
| 3) Connect to IFS-M. | |
| 4) Run IFS-M query "L ACCT over 15K NO FH". | |
| 5) Create dBase database. | |
| c) Update and Prepare Report | |
| 1) Make changes in dBase file | YES |
| 2) Kathy - copy dBase file to floppy diskette & give to Gail | YES |
| 3) Gail - Merge data | |
| 4) Gail - Print project list | |
| 5) Distribute report | |
| **ESTIMATE WORK** | |
| Estimate Work Request | |
| Perform Budget Estimate | |
| Do Budget Estimate | |
| Examine Work Request | |
| 1) Do a site visit of proposed work | |
| 2) Review with requestor the work required | |

| Event/Task/Step Description | Do It Developed |
|---|---|
| Execute LOTUS 150 spreadsheet | |
| 1) Look up all information needed to complete job. | |
| 2) Transfer information from MEANS to Lotus 150 Spreadsheet. | |
| 3) Spreadsheet automatically calculates cost | YES |
| If Not Reimbursable Work | |
| 1) Put in folder to accomp. detail est. or folder to hold until further notice | |
| If Reimbursable Work Unit | |
| 1) Perform steps 2 and 3. | YES |
| 2) Go into PROFS | |
| 3) Send work request to ask for funds transfer | |
| 4) Await receipt of funds | |
| 5) Funds are received | |
| 6) Determine if work is in-house or contract | |
| Retrieve Information from 4283 | |
| 1) Perform steps 2 through 7. | YES |
| 2) Access IFS-M. | |
| 3) Retrieve job site information | |
| 4) Retrieve document number | |
| 5) Retrieve facility number | |
| 6) Retrieve requestor name and telephone number | |
| 7) Retrieve information requested | |
| Perform Detailed Estimate | |
| a) Define Phases | |
| b) Estimate Phase Time | |
| c) Estimate Material Requirements | |
| 1) Fill out Bill of Materials (IFS-M) Labor hours for in-house, Specs for contract | YES |
| 2) Perform steps 3 through 6. | YES |
| 3) Access IFS-M. | |
| 4) Use query to download Bill of Materials. | |
| 5) Use WP and merge files to fill out purchase request. | |

| Event/Task/Step Description | Do It Developed |
|---|---|
| 6) Purchase request: in-house for supply, DOC for contract | |
| Perform Determination of Kind of Work | |
| 1) Is the work in-house | |
| 2) Is the work to be done by contract | |
| Maintain Standards | |
| Maintain Factors | |
| Maintain Estimating Standards | |
| Maintain Supply Catalog | |
| **INSPECT WORK** | |
| Inspect In-House Work | |
| 1) Answer questions | |
| 2) Fill out inspection form | |
| Inspect Contract Work | |
| 1) Answer questions | |
| 2) Fill out inspection form | |
| **APPROVE WORK** | |
| 4283 Scoring | YES |
| 1) Local score (Eustis) | YES |
| 2) Use TRADOC system | YES |
| 3) BMAR scoring | |
| Check Funding | |
| 1) Is the work funded? | |
| 2) Is the work not funded? | |
| Determine Resources (manpower) | |
| 1) In-House | |
| 2) Contract | |
| 3) U-DO-IT | |
| 4) Troop | |
| Estimator Scheduled | |
| 1) Chief, Production Control schedules job to an estimator | |
| Fund Approval | |
| 1) Get approval for materials | |
| 2) Get approval for contract work | |
| 3) Get approval for troop work | |

| Event/Task/Step Description | Do It Developed |
|---|---|
| 4) Get approval to put job on hold | |
| Work Approval | |
| 1) Receive work approval | |
| 2) If contract, send 4283 to DOC | |
| 3) If in-house, send 4283 to Supply/MC | |
| 4) Send 4283 to shops (U-DO-IT, Troops, In-House) | |
| **SCHEDULE WORK** | |
| Revise IFS-M | |
| 1) Get updated information from Chief, Production Control | |
| 2) Get updated information from DEH warehouse | |
| 3) Perform steps 4 through 6. | YES |
| 4) Run Customer Service Menu query in IFS-M | |
| 5) Letter N or O to bring up W/O | |
| 6) Change status in IFS-M | |
| Revise LOTUS File | |
| 1) Use IFS-M data to update LOTUS file | YES |
| 2) Perform steps 3 through N. | YES |
| 3) Update information. | |
| 4) Delete completed jobs | |
| 5) Delete canceled jobs | |
| Send Work to Shops | |
| 1) Send 4283 to appropriate shops | |

| Event/Task/Step Name | DoIt Developed |
|---|---|
| **MANAGE RPF UTILIZATION** | |
| Document RPF Utilization (ICARPUS) | |
| ICARPUS - Fort Eustis | |
| Initiate update of report. | |
| Review previous year's submission. | |
| Separate out and copy sections by activity. | |
| Access form for cover letter. | YES |
| Make changes to form letter as needed. | |
| Print out cover letter & route for signatures. | |
| Enclose respective sections of report. | |

| Event/Task/Step Name | DoIt Developed |
|---|---|
| Send cover letter and sections to each activity requesting updated information. | |
| Receive changes to report. | |
| Incorporate changes received into final draft. | |
| Access file of sections with changes. | YES |
| Make changes and save in file. | |
| Prepare final copy of report. | |
| Prepare copy of report for approval of Garrison Cmdr., RPO, & DEH. | |
| Print out signature page. | YES |
| Highlight changes on copy of report. | |
| Attach signature page to copy & route for signatures. | |
| Receive copy with signatures & comments. | |
| Print out final copy of report. | |
| Include updated photographs of facilities as needed. | |
| Include cover for report binder. | |
| Prepare transmittal letter. | |
| Access form for letter. | YES |
| Make changes to form letter as needed. | |
| Print out transmittal letter & route for signature. | |
| Send final copy to TRADOC. | |
| Prepare report for distribution. | |
| Send copy of highlighted report to DOIM-Editorial. | |
| Receive proofed copy of report from DOIM-Ed. | |
| Make editorial changes to version on file & print. | YES |
| Prepare transmittal letter for distribution. | |
| Access form for letter. | YES |
| Make changes to letter as needed. | |
| Print out letter & route for signature. | |
| Send report to DOIM with printing & distribution instructions. | |
| Receive call from distribution point. | |
| Attach "for official use only" cover on reports. | |
| File a copy of report. | |

| Event/Task/Step Name | DoIt Developed |
|---|---|
| Document RPF Utilization (ICARPUS) - Fort Story | |
| Send previous year's submission to PAO with request for update of information. | |
| Receive changes to report from PAO | |
| Incorporate changes received into final copy of report | |
| Access file of section with changes. | YES |
| Make changes and save in file. | |
| Prepare final copy of report | |
| Prepare copy of report for approval of Garrison Cmdr., RPO, & DEH | |
| Print out signature page. | YES |
| Highlight changes on copy of report. | |
| Attach signature page to copy & route for signatures. | |
| Receive copy with signatures & comments. | |
| Print out final copy of report. | YES |
| Include updated photographs of facilities as needed. | |
| Include cover for report binder. | |
| Prepare transmittal letter. | |
| Access form for letter. | YES |
| Make changes to form letter as needed. | |
| Print out transmittal letter & route for signature. | |
| Send final copy to TRADOC | |
| Prepare report for distribution. | |
| Send copy of highlighted report to DOIM-Editorial. | |
| Receive proofed copy of report from DOIM-Editorial. | |
| Make editorial changes to version on file. | YES |
| Prepare transmittal letter for distribution. | |
| Access form for letter. | YES |
| Make changes to letter as needed. | |
| Print out letter & route for signature. | |
| Send report to DOIM with printing & distribution instructions. | |
| Receive call from distribution point. | |

| Event/Task/Step Name | DoIt Developed |
|---|---|
| Attach "for official use only" cover on reports. | |
| File a copy of report. | |
| Control Space Allocation | |
| Receive request for space. | |
| Add request for space to agenda of next Facility/Space Management Committee Meeting | |
| Access file for agenda for next meeting. | YES |
| Add request for space as a new agenda item. | |
| Conduct meeting of Facility/Space Management Committee. | |
| Relay decision of committee to requestor of space | |
| Access form letter for response. | YES |
| Make changes to form letter as needed. | |
| Print out letter & route for RPO signature. | |
| Send letter to requestor. | |
| Set up meeting between RPO & Requestor to survey space | |
| Contact requestor & get available dates/times | |
| Check RPOs calendar & decide on date/time | |
| Notify requestor of meeting date/time | |
| Add property to gaining hand receipt | |
| **PROCESS GRANT REQUIREMENTS** | |
| Process new request for lease for outgrant | |
| Receive letter of request from activity. | |
| Write letter of availability. | |
| Access form for letter of availability. | YES |
| Make changes to form letter as needed. | |
| Run letter with appropriate address. | |
| Enclose report of availability. | |
| Access form for report of availability. | YES |
| Customize information in form letter. | |
| Print out report of availability. | |
| Enclose an as-built drawing. | |
| Obtain original drawing of area. | |
| Make 4-5 enlarged copies of specific area. | |
| Identify area with a circle on all 4-5 copies. | |

| Event/Task/Step Name | DoIt Developed |
|---|---|
| Shade requested area with colored pencils on all copies | |
| Enclose record of environmental consideration (REC). | |
| Access form letter. | YES |
| Pull in pertinent paragraphs. | |
| Access file containing environmental regulations. | |
| Retrieve specific paragraphs and insert in REC. | |
| Produce Preliminary Assessment Screening form (PAS). | |
| Access form for PAS. | |
| Fill in appropriate blanks. | |
| Route PAS to environmentalist for signature. | |
| Route letter & enclosures with Publication Correspondence Summary form 105 to Cmdr. | |
| Receive approved packet back from Cmdr. | |
| Forward packet on to TRADOC for approval. | |
| Receive copy of signed lease from activity. | |
| Update list of outgrants for ICARPUS. | |
| Access file containing list of outgrants. | YES |
| Make changes to list as needed. | |
| File copy of signed lease. | |
| Process amendment of lease for outgrant | |
| Receive letter of request from activity. | |
| Write letter of availability. | |
| Access form for letter of availability. | YES |
| Make changes to form letter as needed. | |
| Run letter with appropriate address. | |
| Enclose report of availability. | |
| Access form for report of availability. | YES |
| Customize information in form letter. | |
| Print out report of availability. | |
| Enclose an as-built drawing. | |
| Obtain original drawing of area. | |
| Make 4-5 enlarged copies of specific area. | |
| Identify area with a circle on all 4-5 copies. | |

| Event/Task/Step Name | DoIt Developed |
|---|---|
| Shade requested area with colored pencils on all copies | |
| Enclose record of environmental consideration (REC). | |
| Access form letter. | YES |
| Pull in pertinent paragraphs. | |
| Access file containing environmental regulations. | |
| Retrieve specific paragraphs and insert in REC. | |
| Produce Preliminary Assessment Screening form (PAS). | |
| Access form for PAS. | |
| Fill in appropriate blanks. | |
| Route PAS to environmentalist for signature. | |
| Route letter & enclosures with Publication Correspondence Summary form 105 to Cmdr. | |
| Receive approved packet back from Cmdr. | |
| Forward packet on to TRADOC for approval. | |
| Receive copy of signed lease from activity. | |
| Update list of outgrants for ICARPUS. | |
| Access file containing list of outgrants. | YES |
| Make changes to list as needed. | |
| File copy of signed lease. | |
| Process renewal of lease for outgrant. | |
| Receive letter of request from activity. | |
| Write letter of availability. | |
| Access form for letter of availability. | YES |
| Make changes to form letter as needed. | |
| Run letter with appropriate address. | |
| Enclose report of availability. | |
| Access form for report of availability. | YES |
| Customize information in form letter. | |
| Print out report of availability. | |
| Enclose record of environmental consideration (REC). | |
| Access form letter. | YES |
| Pull in pertinent paragraphs. | |
| Access file containing environmental regulations. | |

| Event/Task/Step Name | DoIt Developed |
|---|---|
| Retrieve specific paragraphs and insert in REC. | |
| Produce Preliminary Assessment Screening form (PAS). | |
| Access form for PAS. | |
| Fill in appropriate blanks. | |
| Route PAS to environmentalist for signature. | |
| Route letter & enclosures with Publication Correspondence Summary form 105 to Cmdr. | |
| Receive approved packet back from Cmdr. | |
| Forward packet on to TRADOC for approval. | |
| Receive copy of signed lease from activity. | |
| Update list of outgrants for ICARPUS. | |
| Access file containing list of outgrants. | YES |
| Make changes to list as needed. | |
| File copy of signed lease. | |
| Coordinate ingrant requests. | |
| Receive request for ingrant lease and completed 4283. | |
| Produce Purchase Request Commitment form 3953. | |
| Access blank form 3953. | |
| Input data from form 4283 into form 3953 as applicable. | |
| Print form 3953. | |
| Route form 3953 to Comptroller for addition of funding information. | |
| Receive completed form 3953. | |
| File form 3953. | |
| Update list of ingrants for ICARPUS. | |
| Access file containing list of ingrants. | YES |
| Make changes to list as needed. | |
| **PERFORM SPACE MANAGEMENT** | |
| Produce utilization of admin/storage space report | |
| Write letter to HRHs requesting updated information. | |
| Access form letter. | YES |
| Make changes to form letter as needed. | |
| Access list of HRHs. | |
| Merge two files for personalized form letter. | |

| Event/Task/Step Name | DoIt Developed |
|---|---|
| Enclose blank TCFE 1061. | |
| Enclose blank TCFE 1061A. | |
| Run off and enclose current hand receipt. | |
| Receive signed and dated hand receipt and forms. | |
| Enter updated information in IFS-M. | |
| 1) Perform steps 2 through 4. | YES |
| 2) Update Hand Receipt information in IFS-M. | |
| 3) Update POC/Ph#/Date information in IFS-M. | |
| 4) Enter date of last sign off on hand receipt. | |
| Compile information from TCFE 1061 & 1061A into DD 805. | |
| Gather information needed from completed 1061s & 1061As. | |
| Access DD 805 report software. | YES |
| Enter data in screens. | |
| Transmit information contained in DD 805 to HQ DA. | |
| Print out report for files. | |
| Maintain facility hand receipts | |
| Receive notification of change to hand receipt. | |
| Set up meeting between RPO and losing HRH. | |
| Contact losing HRH & get available dates/times for meeting. | |
| Check RPOs calendar & decide on date/time. | |
| Notify losing HRH of meeting date/time. | |
| Complete TCFE Supply/AR405-70 (Facility Assign & Clearance Record) | |
| Fill in blanks on form appropriate for losing HR. | |
| Send form to losing HRH for completeness of information and signature. | |
| Receive signed TCFE Supply/AR405-70 from losing HRH. | |
| Fill in blanks on form appropriate for gaining HR. | |
| Send form to gaining HRH for completeness and signature. | |
| Receive signed TCFE Supply/AR405-70 from gaining HRH. | |
| Get RPO signature on both forms for final approval. | |
| Meet with losing HRH | |

| Event/Task/Step Name | DoIt Developed |
|---|---|
| Inspect facility being transferred with losing HRH. | |
| Verify information about facility on TCFE Supply/AR405-70. | |
| Collect facility keys. | |
| Remove property from losing hand receipt | |
| Open up file for losing hand receipt. | |
| Remove facility being transferred from hand receipt. | |
| Run off updated hand receipt. | |
| Send updated hand receipt to losing HRH for acceptance and signature. | |
| Receive signed hand receipt. | |
| File hand receipt in appropriate file. | |
| Set up meeting between RPO and gaining HRH | |
| Contact gaining HRH & get available dates/times for meeting. | |
| Check RPOs calendar and decide on date/time. | |
| Notify gaining HRH of meeting date/time. | |
| Meet with gaining HRH | |
| Inspect facility being transferred with gaining HRH. | |
| Verify information about facility on TCFE Supply/AR405-70. | |
| Sign over facility to gaining HRH | |
| Issue facility keys to gaining HRH | |
| Add property to gaining hand receipt | |
| Open up file for gaining hand receipt. | |
| Add facility being transferred to hand receipt. | |
| Run off updated hand receipt. | |
| Send updated hand receipt to gaining HRH for acceptance and signature. | |
| Receive signed hand receipt. | |
| File hand receipt in appropriate file. | |
| Make changes to building list (blue cover) | |
| Locate transferred facility in building list. | |
| Change HRH for building. | |
| Change other information as needed for list. | |
| Make changes to IFS-M | |

| Event/Task/Step Name | DoIt Developed |
|---|---|
| Get copy of completed TCFE Supply/AR405-70 for losing and gaining HRs. | |
| Do a query on IFS-M to locate building being transferred. | |
| Make changes to appropriate fields in IFS-M as needed. | |
| **ACCOMPLISH RPF DISPOSAL** | |
| Identify candidate for disposal | |
| Initiate selection process for disposal | |
| Review potential candidates for disposal from reduction in facilities program. | |
| Rank potential candidates based on pre-determined criterion (age, condition, etc) | |
| Select candidate | |
| Initiate disposal approval | |
| Prepare HUD survey | |
| Open up survey form | |
| Access building information file | |
| Fill in blanks with data specific to building candidate for demolition | |
| Make copy of survey for files | |
| Send HUD survey to DA thru TRADOC | |
| Receive report from HUD on suitability of building for reuse | |
| Coordinate Disposal | |
| Write Letter for Commander's signature to remove from inventory | |
| Access form letter | |
| Make changes to form letter as needed | |
| Print out letter | |
| Route letter to Commander for signature | |
| Receive signed letter from Cmdr. | |
| Prepare 1354 for removal of building from IFS-M | |
| Access form 1354 | |
| Fill in appropriate blocks | |
| Verify data in blocks | |
| Get RPO signature | |
| Route through appropriate channels | |

| Event/Task/Step Name | DoIt Developed |
|---|---|
| Prepare GSA 4283 (Work Control) for building shutdown | |
| Access form 4283 | |
| Fill in appropriate blocks (shut off util, etc) | |
| Route to RPO for signature. | |
| Receive signed form from RPO | |
| Make a copy for file | |
| Prepare DA 377 (Building Detail Report) | |
| Access form 377 | |
| Fill in appropriate blocks | |
| Route for signatures. | |
| Receive signed form. | |
| Make a copy for files | |
| If estimated cost is < $25,000, send form to Installation Commander for approval | |
| If estimated cost is > $25,000, send form to TRADOC for approval | |
| Pass approval form to EP&S for contract for demolition | |
| Query/document disposal | |
| Receive 1354 for removal of building from IFS-M | |
| Verify data on 1354 | |
| Remove building information from IFS-M | |

# Appendix J: Hardware and Software Purchased for Fort Eustis

## Server Hardware and Software

- Compaq System Pro Server
- 320/520 Meg Tape Drive
- Oracle® V6 (including support)
- Banyan® Vines™
  - Vines™ 4.11 (5)
  - LAN Server to Server
  - Network Management
- 1 Network Copy of LanShark™ Mail
- 1 HP IIP LaserJet® Printer
- 2 HP Font Cartridges

## Notes

The tape drive is required for periodic server backups. Oracle V6 includes 1 year of support. The Vines software is the current version being run at Fort Eustis and is required to connect the database server to the existing Banyan network being run at Fort Eustis. The LAN Server to Server option is required for every server in a multi-server LAN environment. The Network Management option is required for every server if that option is being run on the existing LAN and per Michael West; Fort Eustis uses the Network Management option.

## Description of Fort Eustis Equipment

ACROS® Model 4365

486DX/33MHz Personal Computer
8 MB RAM
240 MB Hard Disk
3.5-in. 1.44 MB Floppy Disk Drive
5.25-in. 1.2 MB Floppy Disk Drive
SVGA (1024x768, 16 Colors) Graphics Adapter

Two Serial Ports, One Parallel Port, and One PS/2 Mouse Port
Four 16-bit Expansion Slots
101-Key Enhanced Keyboard
Logitech® PS/2 Mouse
9600 Baud Internal Fax Modem
ACROS® Preloaded Software
MS-DOS® 5.0
Windows® 3.1
PFS: Windows Works®
Prodigy™ Service Startup Kit
Fax and Data Communication

USACERL-Purchased and Loaded Software
QEMM® 6.0
WordPerfect™ for Windows®
Harvard™ Graphics for Windows®
Lotus 1-2-3™ for Windows®

AcerView™ 11D 14-in. Super VGA Color Monitor

# USACERL DISTRIBUTION

Chief of Engineers
ATTN: CEHEC-IM-LH (2)
ATTN: CEHEC-IM-LP (2)
ATTN: CECG
ATTN: CECC-P
ATTN: CECC-R
ATTN: CECW
ATTN: CECW-O
ATTN: CECW-P
ATTN: CECW-PR
ATTN: CEMP
ATTN: CEMP-E
ATTN: CEMP-C
ATTN: CEMP-M
ATTN: CEMP-R
ATTN: CERD-C
ATTN: CERD-ZA
ATTN: CERD-L
ATTN: CERD-M
ATTN: CERM
ATTN: DAEN-ZC
ATTN: DAIM-FD (2)
ATTN: SFIM-IS-FP (2)

CECPW 22310-3862
ATTN: CECPW-E
ATTN: CECPW-FT
ATTN: CECPW-ZC

US Army Engr District
ATTN: Library (40)

US Army Engr Division
ATTN: Library (12)

HQ XVIII Airborne Corps 28307
ATTN: AFZA-DPW-EE

US Army Materiel Command (AMC)
Alexandria, VA 22333-0001
ATTN: AMCEN-F
Henry Diamond Lab 20783
ATTN: Library
White Sands Missile Range 88002
ATTN: Libraary

FORSCOM
Forts Gillem & McPherson 30330
ATTN: FCEN
Installations: (22)

TRADOC
Fort Monroe 23651
ATTN: ATBO-G
Installations: (20)

Fort Belvoir 22060
ATTN: CETEC-ES 22315-3803

USA Natick RD&E Center 01760
ATTN: STRNC-DT
ATTN: DRDNA-F

US Army Materials Tech Lab
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